



STIC Search Report

EIC 1700

STIC Database Tracking Number: 148081

TO: Hoa V Le
Location: REM 9D61
Art Unit : 1752
December 27, 2004

Case Serial Number: 10/656021

From: Les Henderson
Location: EIC 1700
REM 4B28 / 4A30
Phone: 571-272-2538

Leslie.henderson@uspto.gov

Search Notes

Please let me know if you need this searched further. The structures in the registry files have been saved and can be retrieved if needed.

Les



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- I am an examiner in Workgroup: Example: 1713
➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28



SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: HOA VAN LE Examiner #: 60626 Date: 10 Dec. 2004
Art Unit: 1752 Phone Number 301-571-272-1332 Serial Number: 10/656,021
Mail Box and Bldg/Room Location: 922A Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____

Inventors (please provide full names): _____ *please see the attachment*

Earliest Priority Filing Date: _____

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

*please search for an imageable composition (by light) in claims
1-5 especially with the elected species and their chemical structures.
and 17-19*
Thank you

SCIENTIFIC REFERENCE BR
Sci. & Tech. Info. Cntr

DEC 10

Pat. & T.M. Office

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	Type of Search	Vendors and cost where applicable
Searcher: <u>6H</u>	NA Sequence (#) _____	STN <u>\$1,244.01 plus</u>
Searcher Phone #: <u>571-272-2538</u>	AA Sequence (#) _____	Dialog _____
Searcher Location: <u>Rem 4A3D</u>	Structure (#) <u>5</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr. Link _____
Date Completed: <u>12/27/04</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>60</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: <u>480</u>	Other _____	Other (specify) _____

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 Amdt. dated October 15, 2004
 Reply to Office action of September 28, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A direct light imaging compound composition comprising:

a matrix, and *with elected species of ultraviolet curable acrylates*
 an antenna, *with elected species of silicon 2,3 naphthalocyanine*
 wherein the antenna comprises a compound selected from the group *bis(trihexylsilyloxy)*
 consisting of compounds comprising a phthalocyanine
 chromophore and compounds comprising a naphthalocyanine
 chromophore, and
 wherein the antenna is dissolved in the matrix.

2. (Currently amended) The compound composition of claim 1 further comprising:

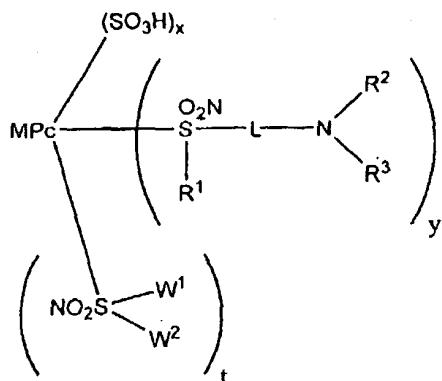
a color former, and *with elected species of 2'-anilino-3'-methyl-6'-(diethylamino)fluoran*
 an activator; *with elected species of bisphenol A*
 wherein one of the activator and the color former is soluble in the ~~cured~~
 matrix or uncured matrix precursor at ambient conditions;
 wherein the soluble of the activator and the color former is *chemical structure is on page 11 of 22 of fax paper on 10/15/04*
 dissolved in the matrix; and
 wherein the other of the activator and the color former is substantially
 uniformly distributed in the matrix.

3. (Currently amended) The compound composition of claim 1 where in the antenna comprises a compound chosen from the group consisting of (A) silicon 2,3 naphthalocyanine bis(trihexylsilyloxy); (B) derivatives of 2,3 naphthalocyanine; (C) derivatives of silicon phthalocyanine; (D) derivatives of benzophthalocyanines; (E)

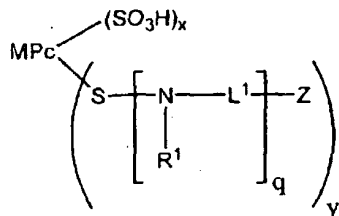
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where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; R^1 , R^2 , W^1 , and W^2 are independently H or optionally substituted alkyl, aryl, or aralkyl; R^3 is an aminoalkyl group; L is a divalent organic linking group; x, y, and t are each independently 0.5 to 2.5; and $(x+y+t)$ is from 3 to 4; (F)



where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; each R^1 independently is H or an optionally substituted alkyl, aryl, or aralkyl; each L^1 independently is a divalent organic linking group; Z is an optionally substituted piperazinyl group; q is 1 or 2; x and y each independently have a value of 0.5 to 3.5; and $(x+y)$ is from 2 to 5; and (G) 800NP.

4. (Currently amended) The compound composition of claim 1 wherein the antenna is tuned to readily absorb laser radiation of a predetermined frequency.

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5. (Currently Amended) The ~~compound~~ composition of claim 1 wherein the antenna is tuned to readily absorb infrared radiation of a predetermined frequency.

6. (Withdrawn) A method for preparing a direct imaging material, the method comprising:

providing a binder, a dye, a color developer, and an antenna,

wherein the antenna is soluble in the binder and selected from the group consisting of compounds comprising a phthalocyanine chromophore and compounds comprising a naphthalocyanine chromophore;

wherein the dye changes color when reacted with the color developer; and

wherein one of the dye and the color developer is soluble in the binder at ambient conditions;

dissolving the antenna and the binder soluble compound in the binder; and substantially uniformly distributing the other of the dye and the color developer compound in the binder.

7. (Withdrawn) The method of claim 6 wherein the antenna is tuned to readily absorb infrared radiation of a predetermined frequency.

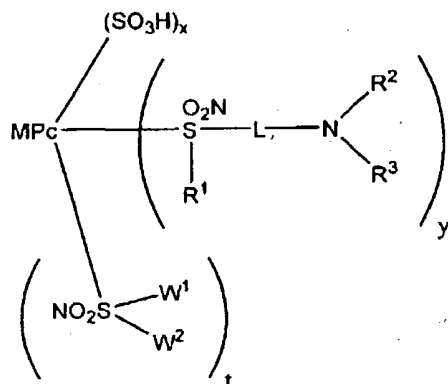
8. (Withdrawn) The method of claim 6 wherein the antenna is tuned to readily absorb laser radiation of a predetermined frequency.

9. (Withdrawn) The method of claim 6 wherein the antenna is selected from the group consisting of (A) silicon 2,3 naphthalocyanine bis(trihexylsilyloxy); (B) derivatives of 2,3 naphthalocyanine; (C) derivatives of silicon phthalocyanine; (D) derivatives of benzophthalocyanines; (E)

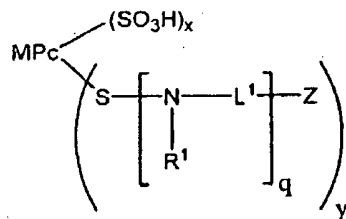
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where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; R^1 , R^2 , W^1 , and W^2 are independently H or optionally substituted alkyl, aryl, or aralkyl; R^3 is an aminoalkyl group; L is a divalent organic linking group; x, y, and t are each independently 0.5 to 2.5; and (x+y+t) is from 3 to 4; (F)



where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; each R^1 independently is H or an optionally substituted alkyl, aryl, or aralkyl; each L' independently is a divalent organic linking group; Z is an optionally substituted piperazinyl group; q is 1 or 2; x and y each independently have a value of 0.5 to 3.5; and (x+y) is from 2 to 5; and (G) 800NP.

10. (Withdrawn) An image recording medium, the medium comprising:
 a substrate; and
 an imaging composition comprising, an antenna and a solvent,
 wherein the antenna comprises a compound selected from the group
 consisting of compounds comprising a phthalocyanine.

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chromophore and compounds comprising a naphthalocyanine
chromophore, and
wherein the antenna is dissolved in the solvent.

11. (Withdrawn) The image recording medium of claim 10 wherein the
imaging composition further comprises:

a dye; and a color initiator;
wherein the dye changes color when mixed with the color initiator;
wherein one of the color initiator and the dye is soluble in the solvent at
ambient conditions;
wherein the other of the color initiator and the dye is substantially insoluble
in the solvent at ambient conditions;
wherein the substantially insoluble component is substantially uniformly
distributed in the solvent; and
wherein the imaging composition is directly or indirectly applied to the
substrate.

12. (Withdrawn) The medium of claim 11 wherein the antenna readily absorbs
infrared radiation of a predetermined frequency.

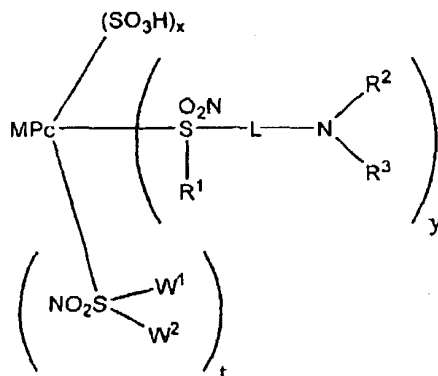
13. (Withdrawn) The medium of claim 11 wherein the antenna readily absorbs
laser radiation of a predetermined frequency.

14. (Withdrawn) The medium of claim 11 wherein the antenna is selected
from the group consisting of (A) silicon 2,3 naphthalocyanine
bis(trihexylsilyloxy); (B) derivatives of 2,3 naphthalocyanine; (C) derivatives of
silicon phthalocyanine; (D) derivatives of benzophthalocyanines; (E)

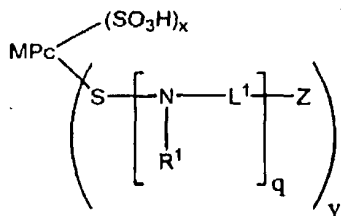
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where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; R^1 , R^2 , W^1 , and W^2 are independently H or optionally substituted alkyl, aryl, or aralkyl; R^3 is an aminoalkyl group; L is a divalent organic linking group; x, y, and t are each independently 0.5 to 2.5; and (x+y+t) is from 3 to 4; (F)



where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; each R^1 independently is H or an optionally substituted alkyl, aryl, or aralkyl; each L^1 independently is a divalent organic linking group; Z is an optionally substituted piperazinyl group; q is 1 or 2; x and y each independently have a value of 0.5 to 3.5; and (x+y) is from 2 to 5; and (G) 800NP.

15. (Withdrawn) The medium of claim 11 wherein the substrate comprises paper.

16. (Withdrawn) The medium of claim 11 wherein the substrate comprises a compact disc or DVD.

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17. (Original) An imaging means, the means comprising:
a means for absorbing energy;
a means for forming color;
a means for initiating a color change in the color forming means;
a means for binding the absorbing means, the color forming means, and
the initiating means;
wherein the absorbing means is dissolved in the binder;
wherein one of the means for forming color and the means for initiating is
soluble in the means for binding at ambient conditions;
wherein the other of the means for forming color and the means for
initiating is substantially insoluble in the means for binding at
ambient conditions; and
wherein the insoluble component is substantially uniformly distributed in
the binder.
18. (Original) The means of claim 17 wherein the means for absorbing readily
absorbs laser radiation of a predetermined frequency.
19. (Original) The means of claim 18 wherein the means for absorbing readily
absorbs infrared radiation of a predetermined frequency.

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Amdt. dated September 10, 2004
Reply to Office action of August 12, 2004

REMARKS/ARGUMENTS

I. RESTRICTION REQUIREMENT

Applicant received the Restriction Requirement of August 12, 2004, in which the Examiner restricted the claims into four groups. Merely to expedite prosecution, Applicant elects, with traverse, Group 1 (claims 1-5), withdraw claims 6-16, and may file a divisional application for the withdrawn claims.

With respect to claims 17-19, Applicant asserts that claims 17-19 should be examined with claims 1-5. The Examiner asserts that claims 17-19 should be classified and examined in class 396, subclass 225+ (PHOTOGRAPHY/ EXPOSURE CONTROL CIRCUIT/COLOR TEMPERATURE COMPENSATION OR DETECTION) rather than class 430 (RADIATION IMAGERY CHEMISTRY: PROCESS, COMPOSITION, OR PRODUCT THEREOF). Applicant respectfully disagrees.

The elements of claims 17-19 are written in § 112, para. 6 "means plus function" form. Thus, when examining the claims, the Examiner must construe the claims to cover "the corresponding structure [and] material . . . described in the specification and equivalents thereof." 35 U.S.C. § 112, para. 6. Although, during examination, Examiners are to give claim terms their broadest reasonable construction, that includes adhering to the mandate of 35 U.S.C. § 112, para. 6 that means plus function terms be interpreted to cover the structures disclosed in the specification and their equivalents, not every conceivable means for performing the named function. *In re Donaldson*, 16 F.3d 1189, 1194, 29 U.S.P.Q.2d 1845 (Fed. Cir. 1994) (*en banc*). In *Donaldson*, the Board interpreted a "means-plus-function" claim term as broadly as possible (*i.e.*, to encompass every means for performing the recited function) rather than evaluating the claim term to cover the means disclosed in the specification (as required by § 112, ¶ 6). Based upon that interpretation, the Board found the claim at issue obvious in light of the prior art. The Federal Circuit reversed, stating, "the 'broadest reasonable interpretation' that an examiner may give means-plus-function language is that statutorily mandated in [35 U.S.C. § 112] paragraph six." *Id.*

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Thus, when reading claims 17-19 in light of the structures and materials disclosed in the specification, it becomes clear that claims 17-19 are analogous to (although not necessarily identical to)¹ claims 1-5. For example, claim 2 and claim 17, when their chemical components are compared side-by-side, contain analogous elements:

CLAIM 2	CLAIM 17
"an antenna" (incorporated from independent claim 1)	"means for absorbing energy"
"a color former"	"means for forming color"
"an activator"	"means for initiating a color change"
"a matrix" (incorporated from independent claim 1)	"means for binding the absorbing means"

Therefore, Applicant respectfully asserts that claims 17-19 are within the same classification as claims 1-5. Thus, no extra searching will be required and claims 17-19 should be examined along with claims 1-5.

II. ELECTION OF SPECIES

The Examiner has stated that claims 1-19 are generic to a plurality of patentably distinct species. With respect to the various chemical ingredients recited in the claims, Applicant elects as follows:

matrix – ultraviolet curable acrylates

antenna – silicon 2,3 naphthalocyanine bis(trihexylsilyloxy)

color former – 2'-anilino-3' methyl-6'-(dibutylamino) fluoran

activator – bisphenol A

This election is not an admission by the Applicant that the recited chemical ingredients of the claims are limited to the elected species, but merely an election of species as required by the Examiner. Applicant asserts that all of claims 1-5 and 17-19 are generic to this species.

¹ By stating that claims 1-5 and 17-19 are analogous, Applicant does not intend to indicate that any of claims 1-5 or their individual elements are necessarily coextensive with any of claims 17-19 or their elements or vice versa. However, by evaluating claims 17-19 in light of § 112, para. 6, it is clear that claims 1-5 and 17-19 are within the same art unit and should be examined together.

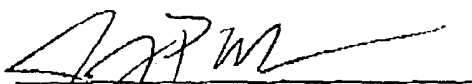
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Further, the Examiner requires that the Applicant "identif[y] the elected chemical structure antenna is either (1) infrared radiation or (2) laser radiation absorption." Applicant assumes that the Examiner wants to know whether the elected species absorbs infrared radiation or laser radiation. Applicant submits that laser radiation and infrared radiation are not mutually exclusive. The elected antenna (silicon 2,3 naphthalocyanine bis(trihexylsilyloxy))₂ absorbs infrared radiation whether from a laser or otherwise.

III. CONCLUSION

Applicant respectfully requests that a timely Notice of Allowance be issued in this case. If any fees or time extensions are inadvertently omitted or if any fees have been overpaid, please appropriately charge or credit those fees to Hewlett-Packard Company Deposit Account Number 08-2025 and enter any time extension(s) necessary to prevent this case from being abandoned.

Respectfully submitted,



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REMARKS/ARGUMENTS

RESTRICTION/ELECTION REQUIREMENT

Applicant received the Restriction/Election Requirement of September 28, 2004, in which the Examiner responded to Applicant's Response of September 10, 2004, and further clarified his election requirement. Applicant files the instant response.

As stated in his first Response, these elections are not admissions by the Applicant that the claims are limited to the elected species, but instead, these elections are made as required by the Examiner to expedite prosecution. All of claims 1-5 and 17-19 are generic to the elected species.

For clarity, Applicant has used the Examiner's section numbering system in responding to the Examiner's concerns and requirements (e.g., I., II., III. 1.)

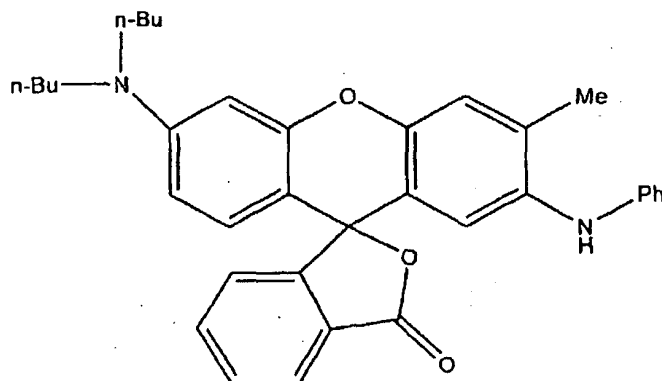
I. With response to the Examiner's statements regarding Applicant's use of the term "compound," Applicant has amended claims 1-5 to recite a "composition" rather than a compound. Applicant hopes that this amendment removes any concerns the Examiner has regarding the Applicant's use of the term "compound." No substantive change in the scope of the claims is intended.

With respect to the Applicant's use of the term "precursor," Applicant has amended claim 2 to recite the "cured matrix and uncured matrix" rather than the "matrix and matrix precursor." Applicant respectfully believe that he has overcome the Examiner's objection to use of the term "precursor." No substantive change in the scope of the claims is intended.

With respect to the Applicant's use of the term "derivative," Applicant submits that the term "derivative" has a meaning to one of ordinary skill in the art, namely, "an organic compound containing a structural radical similar to that from which it is derived, e.g., benzene derivatives containing the benzene ring." Grant, Julius, ed., HACKH'S CHEMICAL DICTIONARY 203 (1969) (attached as Exhibit A). Thus, Applicant believes the use of the term "derivative" in the claims is proper.

II. With respect to the elected color former "2'-anilino-3'-methyl-6'-(dibutylamino) fluoran," the chemical structure, as set out in Formula 7 of the application is:

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For the purposes of this election, the 2'-anilino-3'-methyl-6'-(dibutylamino) fluoran may be uniformly distributed in the matrix.

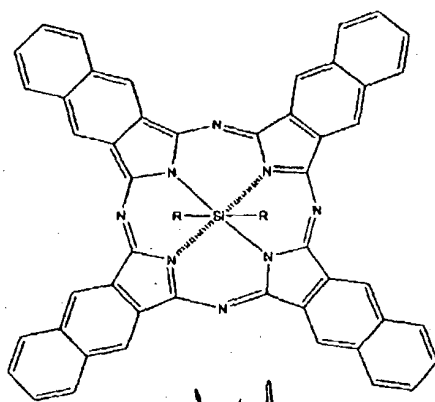
III. 1. The Examiner has stated that "many possible chemical ingredients of matrixes" are broadly disclosed in the art and that "Applicant is required ... to elect a single disclosed chemical ingredient species or matrixes for an initiation of a search... Applicant is requested and required to show or provide the exact chemical structure of the elected chemical ingredient species..." Applicant originally elected the species of ultraviolet curable acrylates. Applicants respectfully assert that the recitation of an exact chemical structure is neither necessary nor proper. The composition of the matrix, in and of itself, is not critical to the present invention. Additionally, the matrices disclose by the Applicant in the present application are purchased from third parties and their compositions are proprietary. For example, page 1 of the MSDS for Sartomer CN294 discloses only that it contains acrylated polyester oligomers, acrylic esters, and low viscosity acrylic oligomers (attached as Exhibit B). It does not disclose which oligomers and esters are present nor in what amount. Thus, for at least this reason, Applicant believes that his election of ultraviolet curable acrylates is proper and sufficient.

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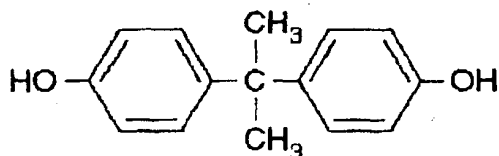
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III. 2. With respect to Applicant's election of silicon 2,3 naphthalocyanine bis(trihexylsilyoxide), the chemical structure, as set forth in the application, is as follows:



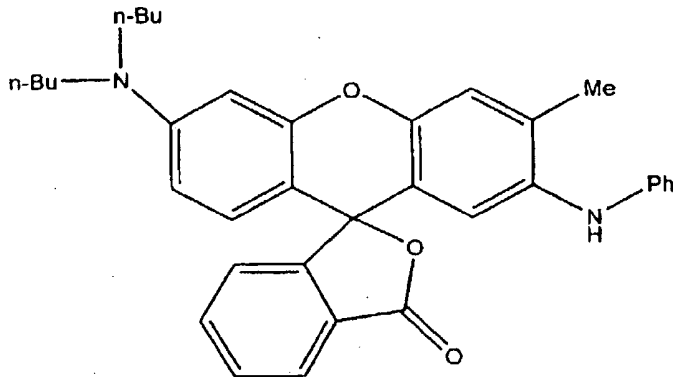
where R= $-\text{O}-\text{Si}-(\text{CH}_2(\text{CH}_2)_4\text{CH}_3)_3$. This antenna absorbs laser radiation.

III. 3. and 4. With respect to the activator, both uniformly distributed and soluble, the chemical structure of Applicant's previously elected activator, bisphenol A, is set forth below:



III. 5. and 6. With respect to the elected color former "2'-anillno-3'-methyl-6'-(dibutylamino) fluoran," the chemical structure, as set out in Formula 7 of the application is:

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CONCLUSION

Applicant believes he has fully responded to the instant Restriction and/or Election Requirement. Applicant respectfully requests that the Examiner examine the case and a timely Notice of Allowance be issued in this case.

It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Hewlett-Packard Development Company's Deposit Account No. 08-2025.

Respectfully submitted,

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BIBDATASHEET

CONFIRMATION NO. 8140

Bib Data Sheet

SERIAL NUMBER 10/656,021	FILING DATE 09/05/2003 RULE	CLASS 430	GROUP ART UNIT 1752	ATTORNEY DOCKET NO. 200312226-1	
APPLICANTS Makarand P. Gore, Corvallis, OR; ** CONTINUING DATA ***** <i>le</i> ** FOREIGN APPLICATIONS ***** <i>le</i> IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 11/29/2003					
Foreign Priority claimed <input type="checkbox"/> yes <input checked="" type="checkbox"/> no 35 USC 119 (a-d) conditions <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Met after met Verified and <i>for Allowance</i> Acknowledged <i>Examiner's Signature</i> Initials		STATE OR COUNTRY OR	SHEETS DRAWING 1	TOTAL CLAIMS 19	INDEPENDENT CLAIMS 4
ADDRESS HEWLETT-PACKARD COMPANY Intellectual Property Administration P.O. Box 272400 Fort Collins, CO 80527-2400					
TITLE Compositions, systems, and methods for imaging					
FILING FEE RECEIVED 834	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____		

COMPOSITIONS, SYSTEMS, AND METHODS FOR IMAGING

Background

[0001] Materials that produce color change upon stimulation with energy (e.g., light or heat) may have possible applications in imaging. For example, such materials may be found in thermal printing papers and instant imaging films. Generally, the materials and compositions known so far may require a multilayer structure and further processing to produce an image (e.g., instant camera films). And in the case of facsimile and thermal head media, high energy input of greater than $1\text{-}5\text{ J/cm}^2$ is needed to achieve good images. The compositions in multilayer media may require control of diffusion of color-forming chemistry and further processing, and are in separate phases and layers. Many thermal and facsimile paper coatings consist of coatings prepared by applying fine dispersions of more than two components. The components mix and react upon application of energy, resulting in a colored material. For the necessary mixing, the particles may need to contact across three or more phases or layers and merge into a new phase. Because of these multiple phases and layers, high energy is required to perform this process. For example, a relatively powerful carbon dioxide laser with an energy density of 3 J/cm^2 at times of much greater than $100\text{ }\mu\text{s}$ may be needed to produce a mark. In some instances, this high energy application may cause damage to the imaging substrate.

[0002] In many situations, it may be desirable to produce a visible mark more efficiently using either a less intense, less powerful, and/or shorter energy application. Therefore, there is a need for fast marking coatings, possibly composed of fewer than three phases and in single layer. One method may be to provide a binder, a dye, a color developer, and an antenna, wherein the dye changes color when reacted with the color developer, wherein one of the dye and the color developer is soluble in the binder at ambient conditions, wherein the antenna and the binder soluble compound are dissolved in the binder; and the other of the dye and the color developer compound are substantially uniformly

distributed in the binder. In such systems, if the antenna is not substantially thermally and light stable, the ability to mark may be lost or diminished, *i.e.*, due to absorption of ambient energy (e.g., sunlight, artificial light, and/or ambient heat). The antenna may lose its ability to absorb energy and deliver it for formation of an image. For example, even antennae which have previously been considered stable (*i.e.*, with an extinction coefficient greater than 100,000, or less than 20% loss in absorption, after exposure to light or heat stress) may be highly susceptible to ambient energy and may show diminished light marking ability after exposure to ambient energy.

[0003] In addition, the formed image may fade if it has not been developed with sufficient energy. For example, many markings may fade after exposure to 40°C/80% humidity after three days. This fading may be due to the inability of the antenna to deliver sufficient energy to the dye, especially due to effect of exposure to light or heat. Heretofore, it may be desirable to produce a system which solves one or more of the foregoing problems.

Summary

[0004] Disclosed herein are imaging materials and methods of making imaging materials. The materials disclosed herein may include an antenna which comprises a compound selected from the group consisting of compounds comprising a phthalocyanine chromophore and compounds comprising a naphthalocyanine chromophore.

Brief Description of the Drawings

[0005] For a detailed description of embodiments of the invention, reference will now be made to the accompanying drawings in which:

[0006] Figure 1 shows a method of preparing an imaging material according to an embodiment of the present invention.

[0007] Figure 2 shows an imaging medium according to an embodiment of the present invention.

Notation and Nomenclature

[0008] Certain terms are used throughout the following description and claims to refer to particular system components. As one skilled in the art will appreciate, companies may refer to components by different names. This document does not intend to distinguish between components that differ in name but not function. In the following discussion and in the claims, the terms "including" and "comprising" are used in an open-ended fashion, and thus should be interpreted to mean "including, but not limited to" The term "leuco dye" is a color forming substance which is colorless or one color in a non-activated state and produces or changes color in an activated state. As used herein, the term "activator" is a substance which reacts with a leuco dye and causes the leuco dye to alter its chemical structure and change or acquire color. By way of example only, activators may be phenolic or other proton donating species which can effect this change. The term "antenna" means a radiation absorbing compound. The antenna readily absorbs a desired specific wavelength of the marking radiation, and transfers energy to cause marking.

Detailed Description

[0009] The following discussion is directed to various embodiments of the invention. The embodiments disclosed should not be interpreted, or otherwise used, as limiting the scope of the disclosure, including the claims. In addition, one skilled in the art will understand that the following description has broad application, and the discussion of any embodiment is meant only to be exemplary of that embodiment, and is not intended to intimate that the scope of the disclosure, including the claims, is limited to that embodiment.

[0010] Embodiments of the present invention include coatings that result in markings which are substantially stable in ambient and near ambient conditions. The materials used to produce markings upon stimulation by energy may include a color-former such as a fluoran leuco dye and an activator such as sulphonylphenol dispersed in a matrix such as radiation-cured acrylate oligomers

and monomers and applied to a substrate. In some embodiments, either the leuco dye or the activator may be substantially insoluble in the matrix at ambient conditions. A substantially stable radiation energy absorber (*i.e.*, antenna) that functions to absorb energy and deliver it to the reactants is also present in this coating. Energy may then be applied by way of, for example, a laser or infrared light. Upon application of the energy, either the activator, the color-former, or both may become heated and mixed which causes the color-former to become activated and a mark to be produced.

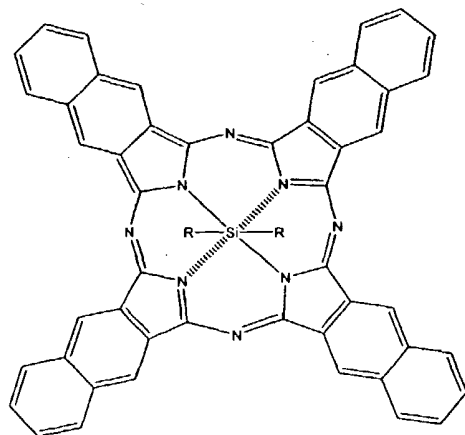
[0011] Referring now to the embodiments illustrated in Figure 2, there is shown imaging medium 100, energy 110, substrate 120, imaging composition 130, and suspended particles 140. Imaging medium 100 may comprise a substrate 120. Substrate 120 may be any substrate upon which it is desirable to make a mark, such as, by way of example only, paper (*e.g.*, labels, tickets, receipts, or stationary), overhead transparencies, or the labeling surface of an optical disk such as a CD-R/RW/ROM or DVD-R/RW/ROM.

[0012] Imaging composition 130 may comprise a matrix, an activator, an antenna, and a color forming dye. The activator and the color forming dye, when mixed, may change color. Either of the activator and the color forming dye may be soluble in the matrix. The other component (activator or color forming dye) may be substantially insoluble in the matrix and may be suspended in the matrix as uniformly distributed particles 140. The imaging composition 130 may be applied to the substrate via any acceptable method, such as, by way of example only, rolling, spraying, or screen printing.

[0013] Energy 110 may be directed imagewise to imaging medium 100. The form of energy may vary depending upon the equipment available, ambient conditions, and desired result. Examples of energy which may be used include IR radiation, UV radiation, x-rays, or visible light. The antenna may absorb the energy and heat the imaging composition 130. The heat may cause suspended particles 140 to reach a temperature sufficient to cause the interdiffusion of the color forming species initially present in the particles (*e.g.*, glass transition temperatures (T_g) or melting temperatures (T_m) of particles 140 and matrix). The

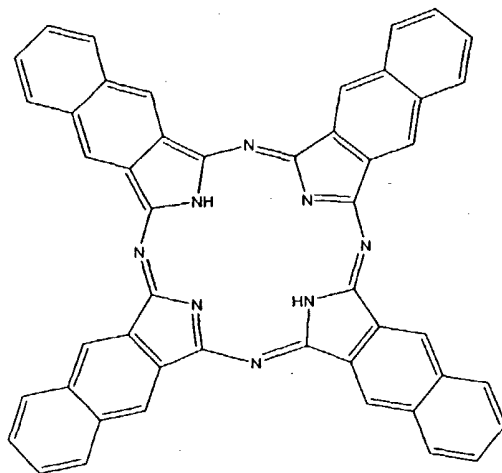
activator and dye may then react to form a color. Without limitation, the antenna may be selected from the following compounds:

(A) silicon 2,3 naphthalocyanine bis(trihexylsilyloxy) (Formula 1) (Aldrich 38,993-5, available from Aldrich, P.O. Box 2060, Milwaukee, WI 53201), and matrix soluble derivatives of 2,3 naphthalocyanine (Formula 2)



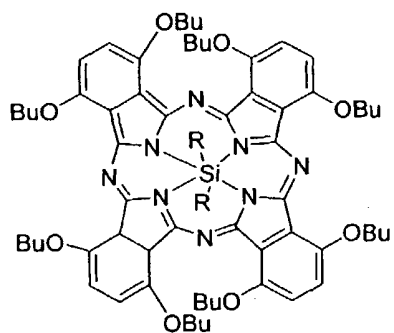
(1)

where R= $-\text{O}-\text{Si}-(\text{CH}_2(\text{CH}_2)_4\text{CH}_3)_3$;

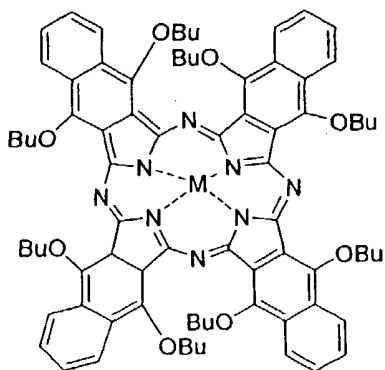


(2)

(B) matrix soluble derivatives of silicon phthalocyanine, described in *Rodgers, A.J. et al.*, 107 J. PHYS. CHEM. A 3503-3514 (May 8, 2003), and matrix soluble derivatives of benzophthalocyanines, described in *Aoudia, Mohamed*, 119 J. AM. CHEM. SOC. 6029-6039 (July 2, 1997), (substructures illustrated by Formula 3 and Formula 4, respectively):



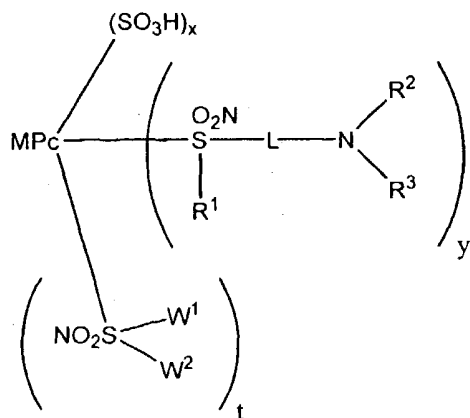
(3) R= Trihexylsilyloxy



(4)

where M is a metal, and;

(C) compounds such as those shown in Formula 5 (as disclosed in U.S. Patent No. 6,015,896)

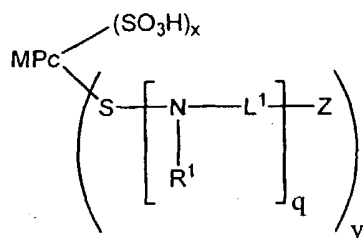


(5)

where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; R¹, R², W¹, and W² are independently H or optionally substituted alkyl, aryl, or aralkyl; R³ is an

aminoalkyl group; L is a divalent organic linking group; x, y, and t are each independently 0.5 to 2.5; and (x+y+t) is from 3 to 4;

(D) compounds such as those shown in Formula 6 (as disclosed in U.S. Patent No. 6,025,486)

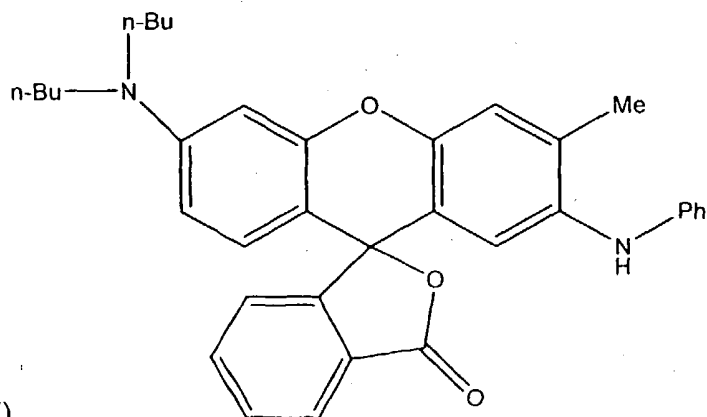


(6)

where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; each R¹ independently is H or an optionally substituted alkyl, aryl, or aralkyl; L¹ independently is a divalent organic linking group; Z is an optionally substituted piperazinyl group; q is 1 or 2; x and y each independently have a value of 0.5 to 3.5; and (x+y) is from 2 to 5; or

(E) 800NP (a proprietary dye available from Avecia, PO Box 42, Hexagon House, Blackley, Manchester M9 8ZS, England).

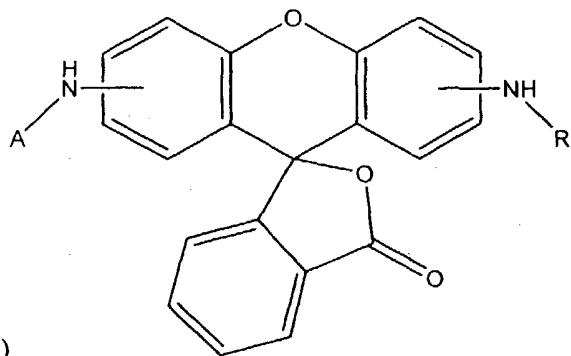
[0014] The activator (e.g., bisphenol-A) and color-forming dye 90 (e.g., 2'-anilino-3'-methyl-6'-(dibutylamino)fluoran, the structure of which is set forth below as Formula 7)



(7)

may act in tandem to produce a mark. The activator and dye may be any two substances which when reacted together produce a color change. When reacted, the activator may initiate a color change in the dye or develop the dye.

One of the activator and the dye may be soluble in the matrix (e.g., lacquer 30) at ambient conditions. The other may be substantially insoluble in the lacquer at ambient conditions. By "substantially insoluble," it is meant that the solubility of the other in the lacquer at ambient conditions is so low, that no or very little color change may occur due to reaction of the dye and the activator at ambient conditions. Although, in the embodiments described above, the activator may be dissolved in the lacquer and the dye remains suspended as a solid in the matrix at ambient conditions, it is also acceptable that the color former may be dissolved in the matrix and the activator may remain as a suspended solid at ambient conditions. Activators may include, without limitation, proton donors and phenolic compounds such as bisphenol-A and bisphenol-S. Color formers may include, without limitation, leuco dyes such as fluoran leuco dyes and phthalide color formers as described in "The Chemistry and Applications of Leuco Dyes", Muthyala, Ramiah, ed., Plenum Press (1997) (ISBN 0-306-45459-9), incorporated herein by reference. Examples of acceptable fluoran leuco dyes comprise the structure shown in Formula 8:



where A and R are aryl or alkyl groups.

[0015] Lacquer 30 may be any suitable matrix for dissolving and/or dispersing the activator, antenna, and color former. Acceptable lacquers may include, by way of example only, UV curable matrices such as acrylate derivatives, oligomers and monomers, with a photo package.

Example 1

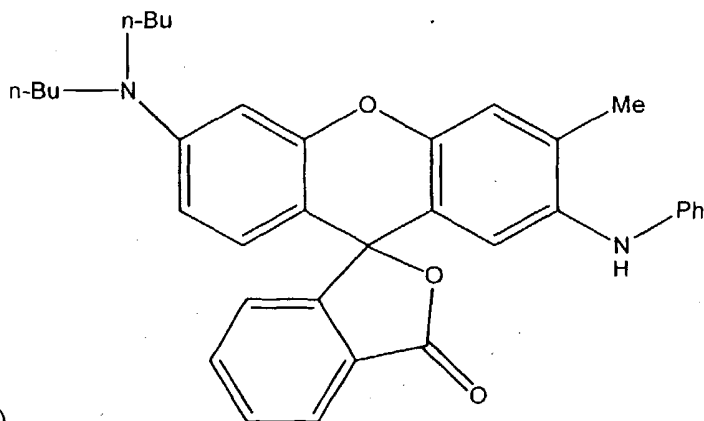
[0016] Referring to the embodiments of Figure 1, which shows a method for preparing an imaging solution in accordance with embodiments of the present

invention, the method may comprise an activator melt 10, an activator/antenna solution 20, a UV curable lacquer solution 30, a lacquer/antenna/activator solution 40, and a two phase UV curable paste 50.

[0017] In accordance with the embodiments illustrated in Figure 1, 2 grams of dibenzyl oxalate was heated to melting (about 85° C). 20 grams of activator bisphenol-A and one gram of antenna silicon 2,3 naphthalocyanine bis(trihexylsilyloxy) (Formula 1), were dissolved in the melted dibenzyl oxalate. The activator/antenna solution 20 was cooled and ground into a fine powder 70.

[0018] Five grams of the ground activator/antenna powder 70 was dissolved in 15.3 g Nor-Cote CDG000 UV-lacquer 30 to form the lacquer/antenna/activator solution 40.

[0019] Ten grams of m-terphenyl (accelerator) 50 was melted in a beaker. The melt 50 was heated to 110° F. 100 grams of 2'-anilino-3'-methyl-6'-(dibutylamino) fluoran (Formula 9) were added in small increments to the melt upon constant stirring:



(9)

(average particle size less than about 5 μm). The temperature of the mixture was increased up to 170-180°C. Stirring was continued until complete dissolution of the 2'-anilino-3'-methyl-6'-(dibutylamino)fluoran in the melt (approximately 10-15 min) to form an accelerator/leuco-dye solution. 550mg of silicon 2,3 naphthalocyanine bis(trihexylsilyloxy) (Formula 1), was added to the melt upon constant stirring.

[0020] Heating and stirring was continued for about two to three additional minutes until the IR dye was completely dissolved in the melt to form a leuco dye/antenna/accelerator alloy (eutectic). Temperature of the leuco dye/antenna/accelerator alloy was kept to below about 190°C.

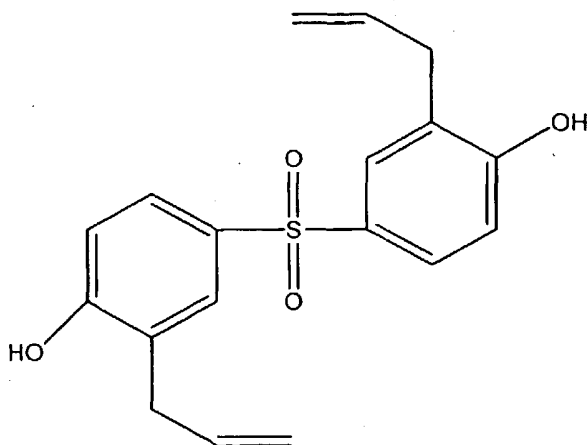
[0021] The leuco-dye/antenna/accelerator alloy was then poured into a pre-cooled freezer tray lined with aluminum foil, where it was allowed to solidify. The solidified melt was milled into a coarse powder and then attrition-ground in the aqueous dispersion until the average particle size of the ground alloy was less than about 4 μm . The ground alloy was dried in a vacuum to form a leuco-dye eutectic powder.

[0022] The mixture of leuco-dye/antenna/accelerator alloy and lacquer/antenna/activator solution 40 was formed into a UV-curable paste 50 and screen printed onto a substrate at a thickness of approximately about 5 to about 7 μm to form an imaging medium. The coating on the medium was then UV cured by mercury lamp.

[0023] Direct marking was effected on the resulting coated substrate with a 45 mW laser. A mark of approximately 20 μm x 45 μm was produced with duration of energy applications of about 30 μsec to about 100 μsec . Direct imaging occurs when the desired image is marked on the imaging medium, without the use of a printing intermediary.

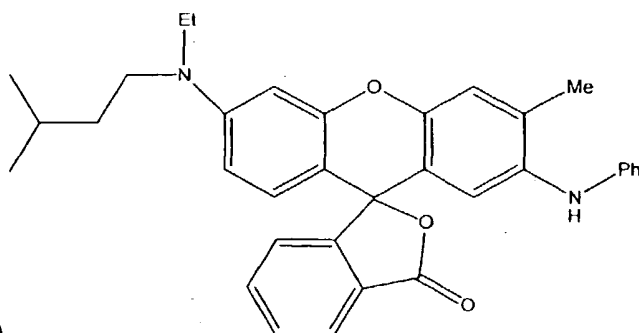
Example 2

[0024] The method of Example 1 was carried out, except that 20 grams of phenol, 4,4'-sulfonylbis[2-(2-propenyl)-(9CI) (Formula 10):



(10)

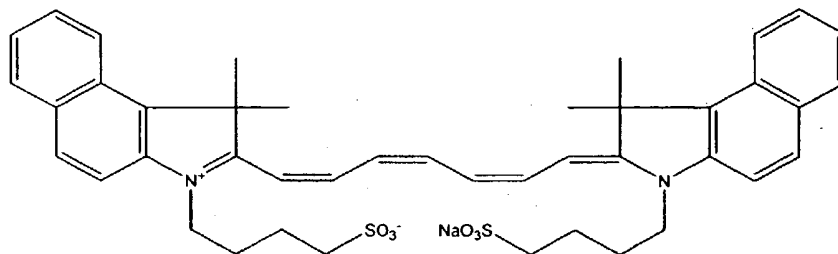
was used as the activator and 1.2 grams of antenna silicon 2,3 naphthalocyanine bis(trihexylsilyloxy) (Formula 1), were dissolved in the melted dibenzyl oxalate to form the activator/antenna solution 20. Activator/antenna solution 20 was cooled and ground into a fine powder 70. Additionally, instead of using 100 grams of 2'-anilino-3'-methyl-6'-(dibutylamino) fluoran as the leuco-dye, 15 grams of leuco-dye 2-anilino-3-methyl-6-(N-ethyl-N-isoamylamino)fluorane (Formula 11) (average particle size < 5 μm) were used to form the accelerator/leuco-dye solution.



(11)

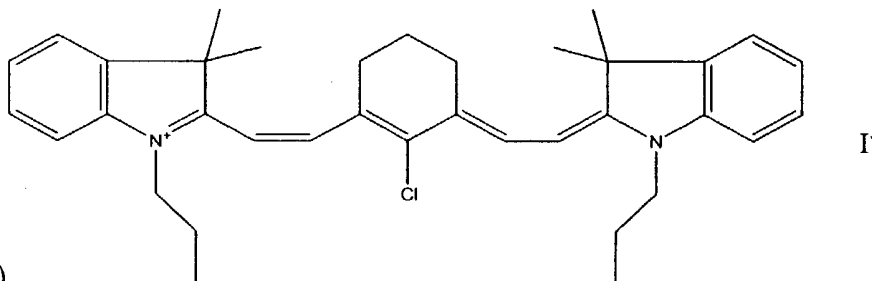
As with Example 1, the mixture of leuco-dye/antenna/accelerator alloy and lacquer/antenna/activator solution 40 was formed into a UV-curable paste 90 and screen printed onto a substrate at a thickness of approximately 7 μm to form an imaging medium. The coating on the medium was then UV cured by mercury lamp. Direct marking was effected on the resulting coated substrate with a 45 mW laser. A mark of approximately 20 μm x 45 μm , with optical density of >0.5, was produced with energy applications of about 60 μsec to 100 μsec .

[0025] Similar procedures were followed using antennae of indocyanine green (Aldrich 22886-9) (Formula 12);



(12)

IR 780 (Aldrich 42,531-1) (Formula 13); and 800NP



(13)

The coatings were exposed to a 21,000 lux fluorescent light for 24 hours, and screened for the marking speed and optical density. Coatings containing indocyanine green or IR 780 did not show any markings after the light treatment. Coatings containing silicon 2,3 naphthalocyanine bis(trihexylsilyloxy) antenna (Formula 1) or 800NP showed less than 20% drop in optical density after the light exposure.

[0026] The foregoing discussion is meant to be illustrative of the principles and various embodiments of the present invention. Numerous variations and modifications will become apparent to those skilled in the art once the above disclosure is fully appreciated. It is intended that the following claims be interpreted to embrace all such variations and modifications.

=> d his

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FILE 'HCA' ENTERED AT 08:11:14 ON 27 DEC 2004

E GORE MAKARAND P/AU

L1 27 S GORE MAKARAND P/AU

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E PHTHALOCYANINE/CN

FILE 'REGISTRY' ENTERED AT 08:13:14 ON 27 DEC 2004

E PHTHALOCYANINE/CN

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E NAPHTHALOCYANINE/CN

L4 1 S NAPHTHALOCYANINE/CN

L5 71 S ?NAPHTHALOCYANIN?/CNS

E BISPHENOL A/CN

L6 1 S BISPHENOL A/CN

L7 1 S FLUORAN/CN

L8 12698 S 7938.12/RID

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L11 STR

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L13 STR

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L15 STRUCTURE L13

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SAV L19 LE021C/A

L20 0 S L3 AND L8 AND L6

L21 1 S L3 AND L8

L22 0 S L13 SSS SAM SUB=L17

L23 0 S L13 SSS FUL SUB=L17

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L24 35754 S L3

L25 34936 S ?PHTHALOCYANIN?

L26 42036 S L24 OR L25

L27 12857 S L6

L28 55953 S BISPHENOL?(W)A

L29 59869 S L27 OR L28

L30 27141 S L8

L31 18106 S ?FLUORAN?

L32 41355 S L30 OR L31
L33 13 S L26 AND L29 AND L32
L34 649 S L5
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L36 1147 S L34 OR L35
L37 0 S L36 AND L29 AND L32
L38 21 S L36 AND L32
L39 372570 S REPROGRAPH?/SC,SX
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L41 820 S L10
L42 0 S L41 AND L29 AND L32
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L44 8 S L43 AND L39
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E IMAGING/CT
E E3+ALL
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L59 1 S L56 AND L58
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SEL L65 RN

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L73 STRUCTURE L15

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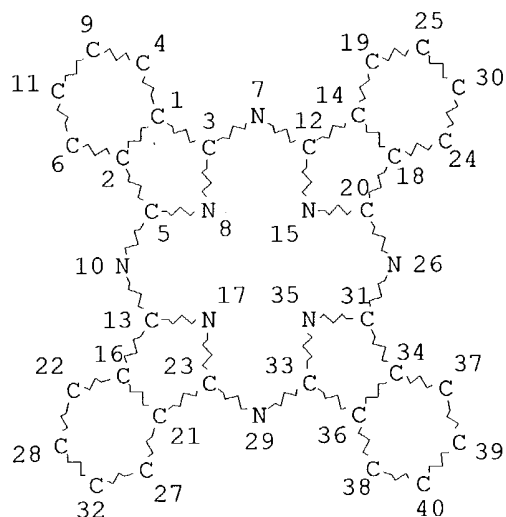
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=> d que stat l10

L9 STR



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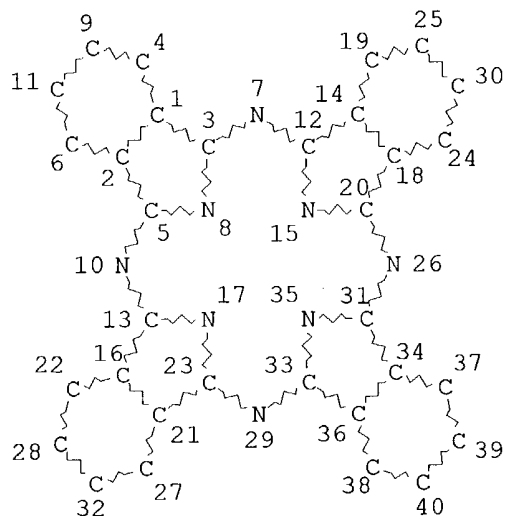
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4299 ANSWERS

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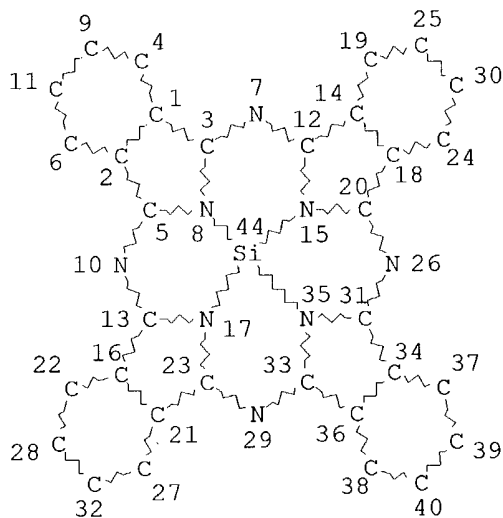
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12/27/2004

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L13 STR



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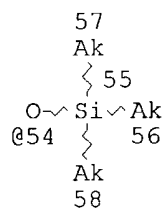
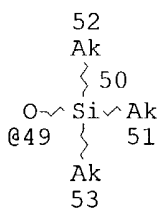
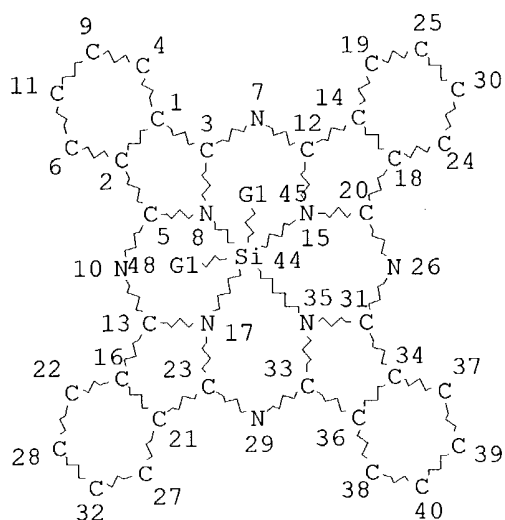
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6 ANSWERS

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L15 STR



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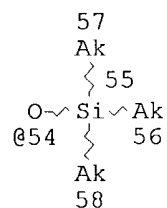
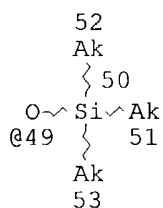
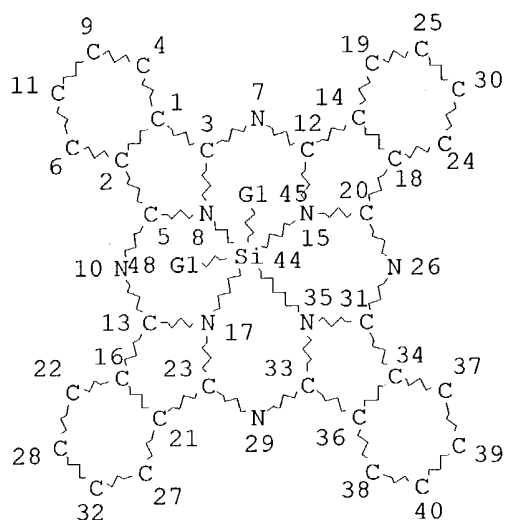
178 ANSWERS

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L15 STR



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DEFAULT ECLEVEL IS LIMITED

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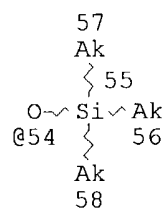
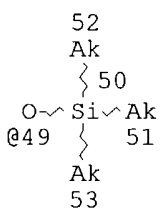
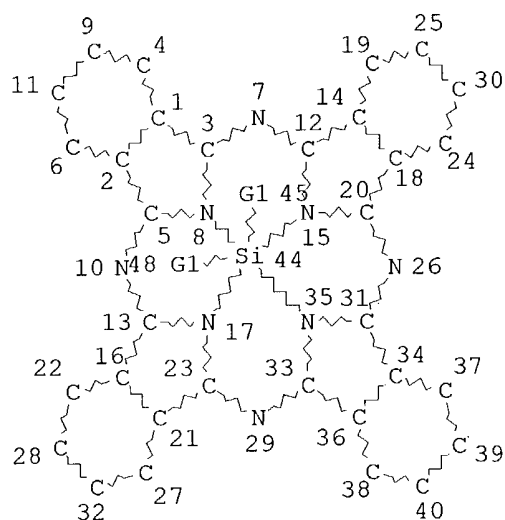
5 ANSWERS

SEARCH TIME: 00.00.01

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L3 25216 SEA FILE=REGISTRY ABB=ON PLU=ON ?PHthalocyanin?/CNS

L15 STR



VAR G1=49/54

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GGCAT IS SAT AT 53

GGCAT IS SAT AT 56

GGCAT IS SAT AT 57

GGCAT IS SAT AT 58

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X10 C AT 51

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GRAPH ATTRIBUTES:

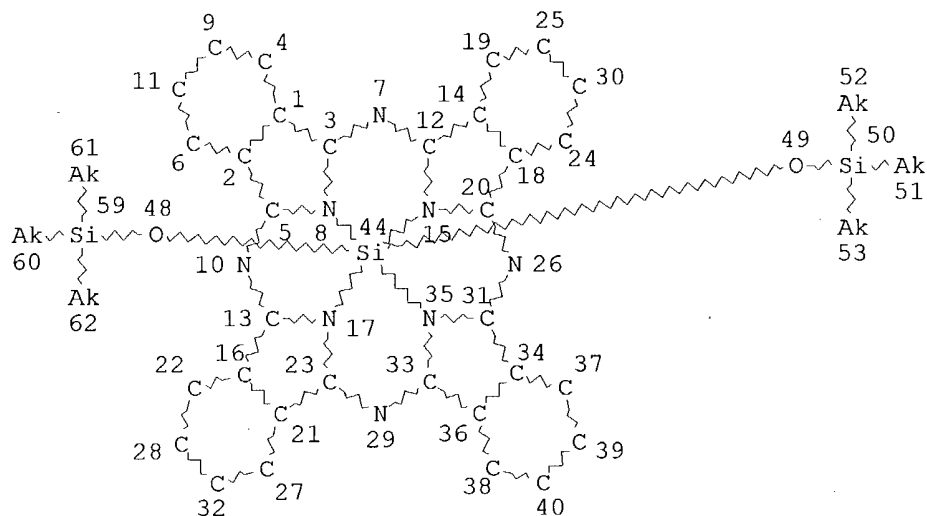
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NUMBER OF NODES IS 53

STEREO ATTRIBUTES: NONE

L17 178 SEA FILE=REGISTRY SUB=L3 SSS FUL L15

L73 STR



SO2-N
@64 65

G1 66

VAR G1=63/64

NODE ATTRIBUTES:

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GGCAT IS SAT AT 53

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GGCAT IS SAT AT 61

GGCAT IS SAT AT 62

DEFAULT ECLEVEL IS LIMITED

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ECOUNT IS M1-X10 C AT 52

ECOUNT IS M1-X10 C AT 53

ECOUNT IS M1-X10 C AT 60

ECOUNT IS M1-X10 C AT 61

ECOUNT IS M1-X10 C AT 62

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 55

STEREO ATTRIBUTES: NONE

L75 16 SEA FILE=REGISTRY SUB=L17 SSS FUL L73

100.0% PROCESSED 16 ITERATIONS

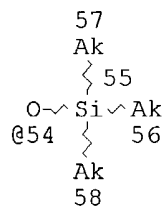
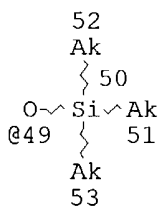
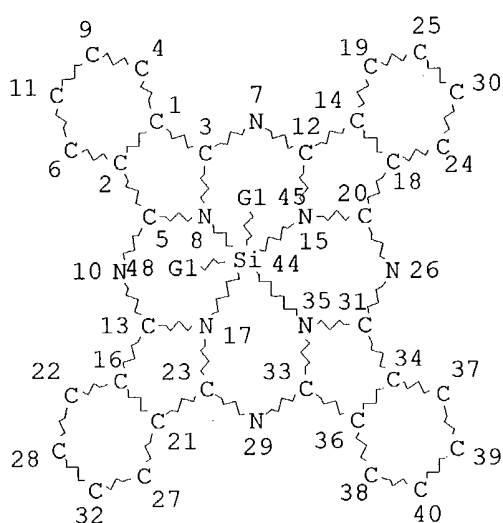
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16 ANSWERS

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=> d que stat 176

L3 25216 SEA FILE=REGISTRY ABB=ON PLU=ON ?PHTHALOCYANIN?/CNS
L15 STR



VAR G1=49/54

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 51

GGCAT IS SAT AT 52

GGCAT IS SAT AT 53

GGCAT IS SAT AT 56

GGCAT IS SAT AT 57

GGCAT IS SAT AT 58

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X10 C AT 51

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ECOUNT IS E6 C AT 58

GRAPH ATTRIBUTES:

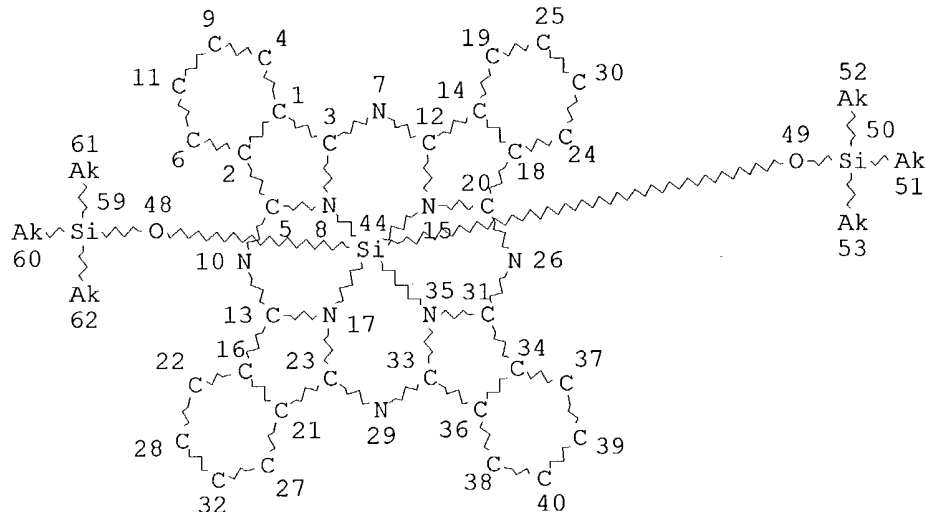
RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 53

STEREO ATTRIBUTES: NONE

L17 178 SEA FILE=REGISTRY SUB=L3 SSS FUL L15

L73 STR



SO3H @63

SO2-N
@64 65

G1 66

VAR G1=63/64

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 51

GGCAT IS SAT AT 52

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GGCAT IS SAT AT 60

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DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X10 C AT 51

ECOUNT IS M1-X10 C AT 52

ECOUNT IS M1-X10 C AT 53

ECOUNT IS M1-X10 C AT 60

ECOUNT IS M1-X10 C AT 61

ECOUNT IS M1-X10 C AT 62

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 55

STEREO ATTRIBUTES: NONE

L75 16 SEA FILE=REGISTRY SUB=L17 SSS FUL L73

L76 4 SEA FILE=HCA ABB=ON PLU=ON L75

=> d 176 1-4 cbib abs hitstr hitind

L76 ANSWER 1 OF 4 HCA COPYRIGHT 2004 ACS on STN

140:392335 Fluorescent silicon phthalocyanine dyes for use with biomolecules..

Peng, Xinzhan; Draney, Daniel R.; Chen, Jiyan (Li-Cor, Inc., USA). PCT

Int. Appl. WO/2004/038378-A2=2004/0506, 82 pp. DESIGNATED STATES: W: AE,

AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR.

(English). CODEN: PIXXD2. APPLICATION: WO 2003-US33995 20031024.

PRIORITY: US 2002-PV421287 20021025.

AB Fluorescent dyes are disclosed which are useful as reporter groups for labeling biomols. The silicon phthalocyanine dyes disclosed are preferably water soluble, isomerically pure, possess high quantum yield, and are useful in bioassays. In an example, 3-nitrophthalonitrile was treated with 1,3-propanediol to give a hydroxypropoxylated phthalonitrile which with NH₃ was converted to a diiminoisoindoline for use as a phthalocyanine building block with SiCl₄.

IT **685898-15-1P 685898-16-2P 685898-17-3P**

685898-18-4P 685898-19-5P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(production of silicon phthalocyanine fluorescent dyes for labeling of biomols.)

RN 685898-15-1 HCA

CN Silicate(4-), bis[N-[3-[(hydroxy-κO)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)][3-[(29H,31H-phthalocyanin-1-yl-κN29,κN30,κN31,κN32)oxy]-1-propanolato(2-)]-, tetrasodium, (OC-6-13)- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 685898-16-2 HCA

CN Silicate(4-), bis[N-[3-[(hydroxy-κO)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)][3-[(29H,31H-phthalocyanin-1-yl-κN29,κN30,κN31,κN32)oxy]propyl 1H-imidazole-1-carboxylato(2-)]-, tetrasodium, (OC-6-13)- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 685898-17-3 HCA

CN Silicate(5-), bis[N-[3-[(hydroxy-κO)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)][4-[[[3-[(29H,31H-phthalocyanin-1-yl-κN29,κN30,κN31,κN32)oxy]propoxy]carbonyl]amino]butanoato(3-)]-, pentasodium, (OC-6-13)- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 685898-18-4 HCA

CN Silicate(4-), bis[N-[3-[(hydroxy-κO)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)][3-[(29H,31H-phthalocyanin-1-yl-κN29,κN30,κN31,κN32)oxy]propyl [4-[(2,5-dioxo-1-pyrrolidinyl)oxy]-4-oxobutyl]carbamato(2-)]-, tetrasodium, (OC-6-13)- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 685898-19-5 HCA

CN Silicate(5-), bis[N-[3-[(hydroxy-κO)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)][N-[[[3-[(29H,31H-phthalocyanin-1-yl-κN29,κN30,κN31,κN32)oxy]propoxy]carbonyl]glycinato(3-)]-, pentasodium, (OC-6-13)- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **685898-20-8P**

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(production of silicon phthalocyanine fluorescent dyes for labeling of biomols.)

RN 685898-20-8 HCA
 CN Silicate(4-), bis[N-[3-[(hydroxy-κO)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)][3-[(29H,31H-phthalocyanin-1-yl-κN29,κN30,κN31,κN32)oxy]propyl-21-[(3aS,4S,6aR)-hexahydro-2-oxo-1H-thieno[3,4-d]imidazol-4-yl]-6,17-dioxo-10,13-dioxo-2,7,16-triazaheneicosanoato(2-)]-, tetrasodium, (OC-6-13)-(9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **685898-26-4DP**, fluorescent indicators
 RL: IMF (Industrial manufacture); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (silicon phthalocyanine fluorescent dyes for labeling of biomols.)

RN 685898-26-4 HCA
 CN Silicate(2-), [4-[13,13-dimethyl-18,25-dioxo-29-[(29H,31H-phthalocyanin-1-yl-κN29,κN30,κN31,κN32)oxy]-26-oxa-4,6,17,24-tetraaza-13-azonia-4,5-nonacosadienyl]-4-methylmorpholiniumato(2-)]bis[N-[3-[(hydroxy-κO)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)]-, disodium, (OC-6-13)-(9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM G01N

CC 41-7 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)

Section cross-reference(s): 9, 25, 28, 78

IT 19333-15-4P 685898-10-6P 685898-11-7P 685898-12-8P 685898-13-9P

685898-14-0P **685898-15-1P 685898-16-2P**

685898-17-3P 685898-18-4P 685898-19-5P

685898-21-9P 685898-23-1P 685898-24-2P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(production of silicon phthalocyanine fluorescent dyes for labeling of biomols.)

IT **685898-20-8P**

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(production of silicon phthalocyanine fluorescent dyes for labeling of biomols.)

IT 685898-22-0P 685898-25-3P **685898-26-4DP**, fluorescent indicators

RL: IMF (Industrial manufacture); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)

(silicon phthalocyanine fluorescent dyes for labeling of biomols.)

L76 ANSWER 2 OF 4 HCA COPYRIGHT 2004 ACS on STN

124:254783 Phthalocyanine photosensitizers for photodynamic therapy and methods for their use. Kenney, Malcolm E.; Oleinick, Nancy L.; Rihter, Boris D.; Li, Ying Syi (University Hospitals of Cleveland, USA). ~~U.S. Ser. No. 5484778-A~~ 19960116, 22 pp. Cont.-in-part of U.S. Ser. No. 980,494, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1993-116259 19930902. PRIORITY: US 1990-554290 19900717; US 1992-980494 19921123.

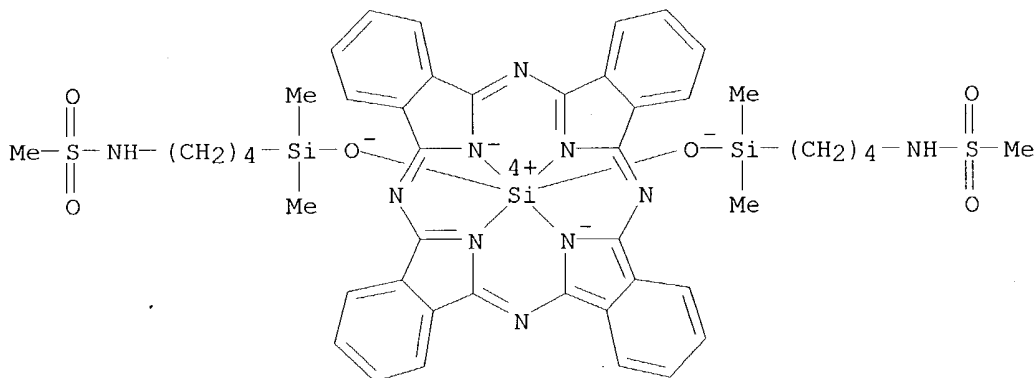
AB The present invention relates to a series of novel phthalocyanine compns. (or compds.) suitable for use as photosensitizers for photodynamic therapy. Specifically, the invention relates to a series of new aluminum (Al) germanium (Ge), gallium (Ga), tin (Sn) and/or silicon (Si) phthalocyanines having substituted amine or quaternary ammonium axial ligands attached to the central metal, and the use of these new phthalocyanine compns. for the treatment of cancer through photosensitization. Methods are disclosed for preparing these compns. for use in photodynamic therapy.

IT **167945-62-2**

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(phthalocyanine photosensitizer preparation for photodynamic therapy, and method of use)

RN 167945-62-2 HCA

CN Silicon, bis[N-[4-(hydroxydimethylsilyl)butyl]methanesulfonamidato-ON][29H,31H-phthalocyaninato(2-)-N29,N30,N31,N32]-, (OC-6-12)-(9CI) (CA INDEX NAME)



IC ICM C09B047-04

ICS C09B047-08; A61K031-555; A61K031-685

NCL 514063000

CC 8-9 (Radiation Biochemistry)

Section cross-reference(s): 28, 63

IT 142084-56-8 147762-70-7 158239-63-5 158239-64-6 167945-51-9
167945-54-2 167945-56-4 167945-58-6 **167945-62-2**
167945-63-3 167945-65-5 167945-68-8 167945-73-5 167945-75-7
167945-77-9 167945-80-4 167945-81-5 167945-84-8 167945-85-9
167945-87-1 167945-88-2 167945-92-8 175159-74-7

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(phthalocyanine photosensitizer preparation for photodynamic therapy, and method of use)

L76 ANSWER 3 OF 4 HCA COPYRIGHT 2004 ACS on STN

123:202041 Phthalocyanine photosensitizers for photodynamic therapy and methods for their synthesis and use. Kenney, Malcolm E.; Oleinick, Nancy L.; Rihter, Boris D.; Li, Ying-syi (Case Western Reserve University, USA).

PCT Int. Appl. WO 9506688 A1 19950309, 67 pp. DESIGNATED STATES: W: AU, CA, JP, KR; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1994-US10052 19940831. PRIORITY: US 1993-116259 19930902.

AB The phthalocyanines have substituted aminoalkyl or quaternary ammonium axial ligands attached to the central metal, which is Si, Al, Ga, Ge or Sn, and are useful for the treatment of cancer through photosensitization. MeMgCl was added to a THF solution of (MeO)3SiCH2CH2CH2NMe2 to give MeOSiMe2(CH2)3NMe2, which was added slowly to a suspension of HOAlPc (Pc = phthalocyanine), forming blue Me2N(CH2)3SiMe2OAlPc (I). I was quaternized with MeI to give a blue solid, soluble in MeOH and CH2Cl2 but insol. in water or PhMe. Both I and its quaternary derivative showed an inhibitory effect on the growth of Chinese hamster lung fibroblasts in vitro when used with red light irradiation

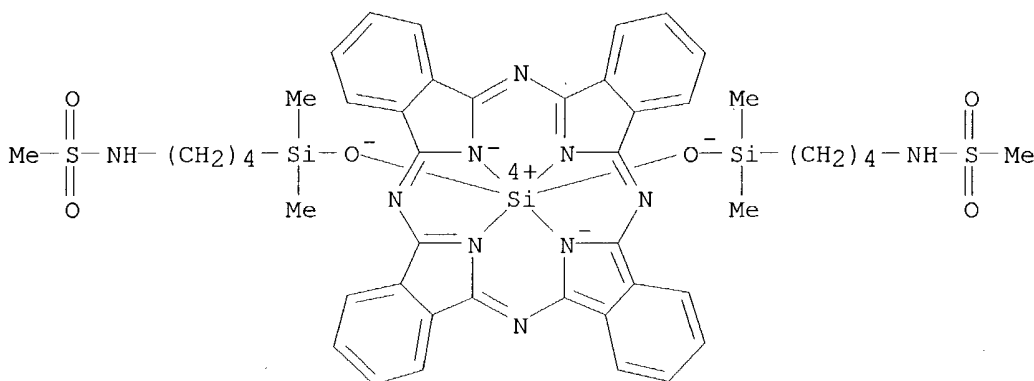
IT **167945-62-2P**

RL: IMF (Industrial manufacture); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)

(preparation of phthalocyanine photosensitizers for photodynamic therapy)

RN 167945-62-2 HCA

CN Silicon, bis[N-[4-(hydroxydimethylsilyl)butyl]methanesulfonamidato-
ON][29H,31H-phthalocyaninato(2-)-N29,N30,N31,N32]-, (OC-6-12)- (9CI) (CA
INDEX NAME)



IC ICM C09B047-04

ICS C09B047-08; A61K031-695

CC 41-7 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic
Sensitizers)

Section cross-reference(s): 8

IT 142084-55-7P 142084-57-9P 142084-58-0P 158239-63-5P 158239-64-6P
167945-51-9P 167945-54-2P 167945-56-4P 167945-58-6P
167945-62-2P 167945-63-3P 167945-65-5P 167945-68-8P
167945-70-2P 167945-73-5P 167945-75-7P 167945-77-9P 167945-80-4P
167945-81-5P 167945-84-8P 167945-85-9P 167945-87-1P 167945-88-2P
167945-92-8P

RL: IMF (Industrial manufacture); THU (Therapeutic use); BIOL (Biological
study); PREP (Preparation); USES (Uses)

(preparation of phthalocyanine photosensitizers for photodynamic therapy)

L76 ANSWER 4 OF 4 HCA COPYRIGHT 2004 ACS on STN

117:201999 Rewritable optical recording medium. Hagiwara, Hideo; Hayashi,
Nobuyuki; Tai, Seiji; Akimoto, Takayuki; Katayose, Mitsuo (Hitachi
Chemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 04014486 A2
19920120 Heisei, 21 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
1990-118009 19900508.

GI For diagram(s), see printed CA Issue.

AB The title optical recording medium utilizes adjacent polymer layers based
on a polymer which is rubberlike at room temperature and a dye DY1 and DY2,
resp., DY1 and DY2 absorbing at different wavelengths and 1 or both having
a structure represented by (I) [M = Si, Ge, Sn; Y = aryloxyl, alkoxyl,
trialkylsiloxy, triarylsiloxy, trialkoxysiloxy, triaryloxysiloxy,
trityloxy, acyloxy; Al-4 = aromatic ring].

IT **143558-31-0**

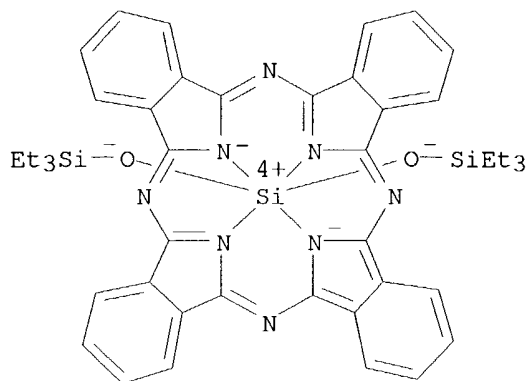
RL: USES (Uses)

(pigment, optical recording medium using)

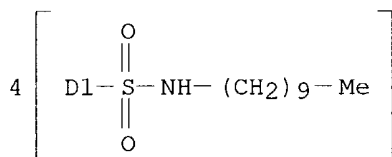
RN 143558-31-0 HCA

CN Silicon, [N,N',N'',N'''-tetrakis(decyl)-29H,31H-phthalocyanine-C,C,C,C-
tetrasulfonamidato(2-)-N29,N30,N31,N32]bis(triethylsilanolato)- (9CI) (CA
INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM B41M005-26
ICS G11B007-24

CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

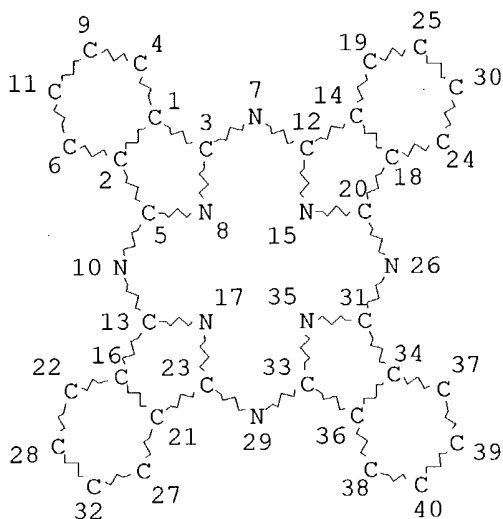
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144029-29-8 144122-95-2 144122-96-3 144122-97-4 144122-98-5
144122-99-6 144141-64-0

RL: USES (Uses)
(pigment, optical recording medium using)

=>

=> d que stat 1113

L3 25216 SEA FILE=REGISTRY ABB=ON PLU=ON ?PHTHALOCYANIN?/CNS
 L5 71 SEA FILE=REGISTRY ABB=ON PLU=ON ?NAPHTHALOCYANIN?/CNS
 L6 1 SEA FILE=REGISTRY ABB=ON PLU=ON BISPHENOL A/CN
 L8 12698 SEA FILE=REGISTRY ABB=ON PLU=ON 7938.12/RID
 L9 STR



SO3H 41 SO2-N
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DEFAULT ECLÉVEL IS LIMITED

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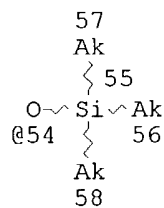
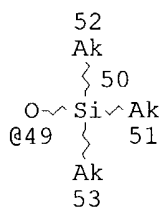
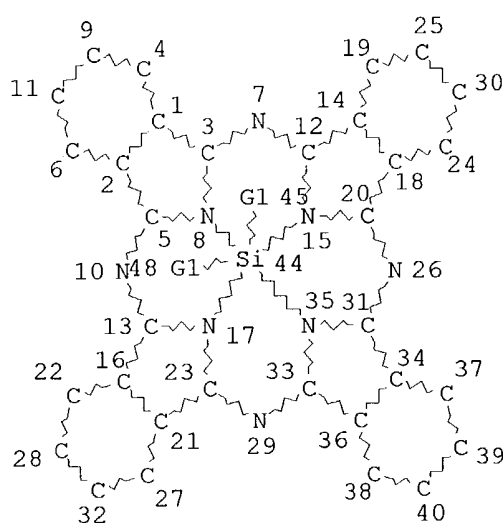
RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 43

STEREO ATTRIBUTES: NONE

L10 4299 SEA FILE=REGISTRY SSS FUL L9

L15 STR



VAR G1=49/54

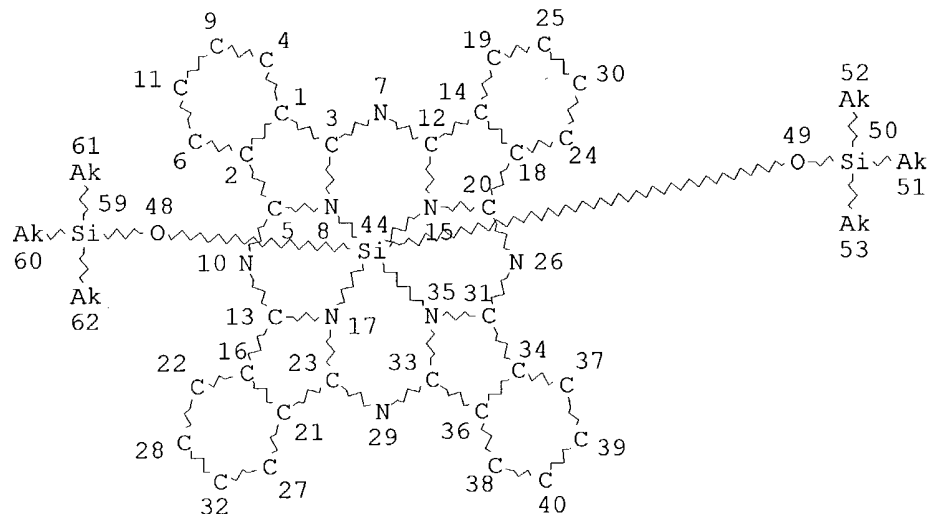
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GGCAT IS SAT AT 58
DEFAULT ECLEVEL IS LIMITED
ECOUNT IS M1-X10 C AT 51
ECOUNT IS M1-X10 C AT 52
ECOUNT IS M1-X10 C AT 53
ECOUNT IS E6 C AT 56
ECOUNT IS E6 C AT 57
ECOUNT IS E6 C AT 58

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 53

STEREO ATTRIBUTES: NONE

L17 178 SEA FILE=REGISTRY SUB=L3 SSS FUL L15
L24 35754 SEA FILE=HCA ABB=ON PLU=ON L3
L25 34936 SEA FILE=HCA ABB=ON PLU=ON ?PHTHALOCYANIN?
L26 42036 SEA FILE=HCA ABB=ON PLU=ON L24 OR L25
L27 12857 SEA FILE=HCA ABB=ON PLU=ON L6
L28 55953 SEA FILE=HCA ABB=ON PLU=ON BISPHENOL?(W)A
L29 59869 SEA FILE=HCA ABB=ON PLU=ON L27 OR L28
L30 27141 SEA FILE=HCA ABB=ON PLU=ON L8
L31 18106 SEA FILE=HCA ABB=ON PLU=ON ?FLUORAN?
L32 41355 SEA FILE=HCA ABB=ON PLU=ON L30 OR L31
L33 13 SEA FILE=HCA ABB=ON PLU=ON L26 AND L29 AND L32
L34 649 SEA FILE=HCA ABB=ON PLU=ON L5
L35 1025 SEA FILE=HCA ABB=ON PLU=ON ?NAPHTHALOCYANIN?
L36 1147 SEA FILE=HCA ABB=ON PLU=ON L34 OR L35
L38 21 SEA FILE=HCA ABB=ON PLU=ON L36 AND L32
L39 372570 SEA FILE=HCA ABB=ON PLU=ON REPROGRAPH?/SC, SX
L41 820 SEA FILE=HCA ABB=ON PLU=ON L10
L43 18 SEA FILE=HCA ABB=ON PLU=ON L41 AND L32
L46 233 SEA FILE=HCA ABB=ON PLU=ON L17
L49 12 SEA FILE=HCA ABB=ON PLU=ON L46 AND L32
L73 STR



VAR G1=63/64

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 51
GGCAT IS SAT AT 52
GGCAT IS SAT AT 53
GGCAT IS SAT AT 60
GGCAT IS SAT AT 61
GGCAT IS SAT AT 62

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X10 C AT 51
ECOUNT IS M1-X10 C AT 52
ECOUNT IS M1-X10 C AT 53
ECOUNT IS M1-X10 C AT 60
ECOUNT IS M1-X10 C AT 61
ECOUNT IS M1-X10 C AT 62

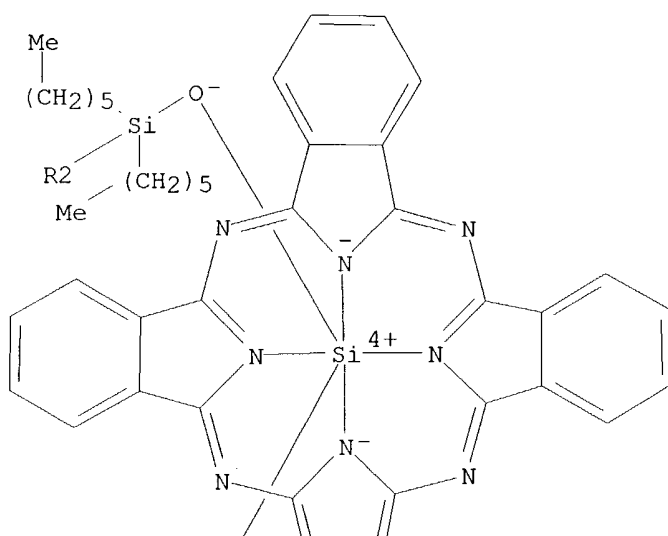
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 55

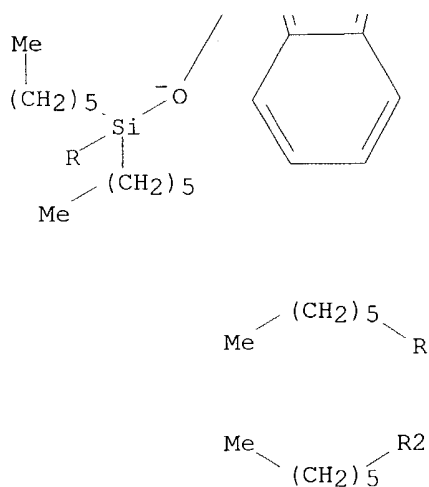
STEREO ATTRIBUTES: NONE

L75 16 SEA FILE=REGISTRY SUB=L17 SSS FUL L73
L76 4 SEA FILE=HCA ABB=ON PLU=ON L75
L81 495952 SEA FILE=HCA ABB=ON PLU=ON PHOTOGRAPH?/SC, SX
L95 11 SEA FILE=HCA ABB=ON PLU=ON L33 AND L81
L100 495952 SEA FILE=HCA ABB=ON PLU=ON L81 OR L39
L101 5 SEA FILE=HCA ABB=ON PLU=ON L100 AND L38
L102 11 SEA FILE=HCA ABB=ON PLU=ON L100 AND L33
L103 5 SEA FILE=HCA ABB=ON PLU=ON L100 AND L38
L104 10 SEA FILE=HCA ABB=ON PLU=ON L100 AND L43
L105 6 SEA FILE=HCA ABB=ON PLU=ON L100 AND L49
L110 27 SEA FILE=HCA ABB=ON PLU=ON L95 OR L101 OR L102 OR L103 OR

PAGE 1-A



PAGE 2-A



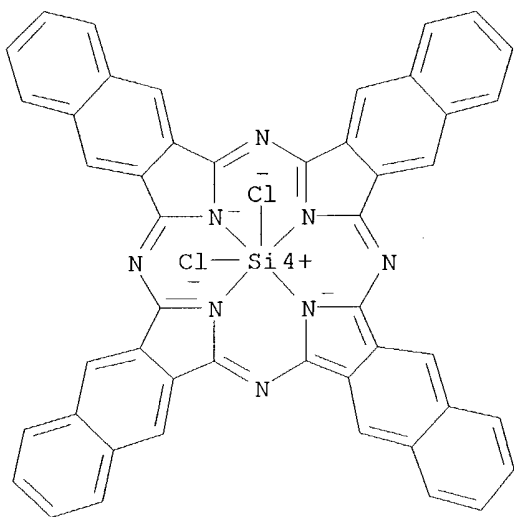
IT 92396-91-3 105528-25-4

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

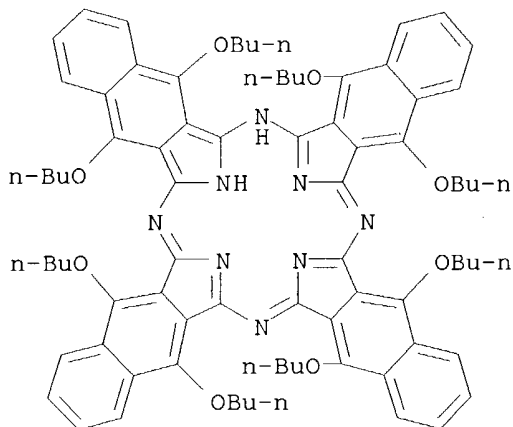
RN 92396-91-3 HCA

CN Silicon, dichloro[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrizinato(2-)-κN37,κN38,κN39,κN40]-, (OC-6-12)- (9CI) (CA INDEX NAME)



RN 105528-25-4 HCA

CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3''-1:2''',3'''-q]porphyrazine,
5,9,14,18,23,27,32,36-octabutoxy- (9CI) (CA INDEX NAME)



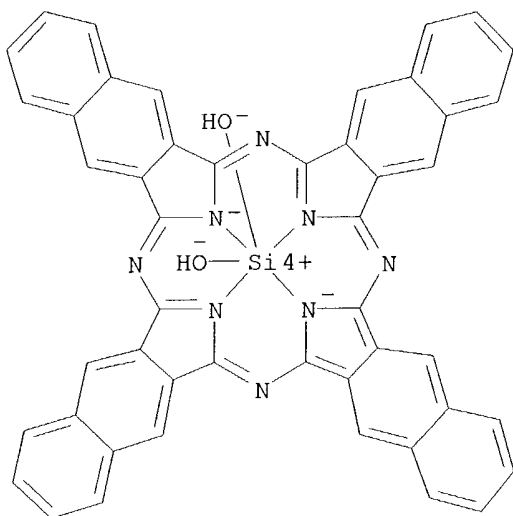
IT **92396-90-2P**

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and
nucleic acid assays)

RN 92396-90-2 HCA

CN Silicon, dihydroxy[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-1:2''',3'''-
q]porphyrazinato(2-)-κN37,κN38,κN39,κN40]-,
(OC-6-12)- (9CI) (CA INDEX NAME)

IT **209161-25-1P**

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

RN 209161-25-1 HCA

CN Silicon, bis[3-[(hydroxy-κO)dimethylsilyl]propanenitrilato][29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,κN32]-,
(OC-6-12)- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM G01N033-543

ICS G01N033-536; C09B047-04

NCL 436536000

CC 41-7 (Dyes, Organic Pigments, Fluorescent Brighteners, and
Photographic Sensitizers)

IT 514-73-8 519-62-0 **2321-07-5** 3071-70-3 16595-48-5
23178-67-8 23481-50-7 24796-94-9 26529-11-3 39001-62-2
52199-35-6 53213-94-8 70365-30-9 83484-76-8 83768-56-3
85752-56-3 97148-81-7 97807-64-2 116453-73-7 127274-91-3
129707-63-7 150749-57-8 163968-82-9 163968-85-2 171118-93-7
195203-87-3 209161-37-5 209161-39-7

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

IT 68-26-8P, Retinol 68812-20-4P **92396-89-9P** 163968-88-5P
163968-89-6P 163968-92-1P 163968-94-3P 163968-95-4P 163969-09-3P
163969-10-6P 163969-14-0P 183872-63-1P 209161-30-8P 209161-31-9P
209161-33-1P

RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST
(Analytical study); PREP (Preparation); USES (Uses)
(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

IT 75-78-5 76-86-8 597-52-4 1631-83-0 1719-58-0 1835-65-0
3468-11-9 3634-67-1 6554-98-9 7646-78-8, reactions 10026-04-7
10038-98-9 10264-67-2 17196-12-2 18156-15-5 19333-10-9
20082-71-7 26857-61-4 32703-80-3 37623-03-3 53749-38-5
74815-81-9 **92396-91-3** 102488-47-1 **105528-25-4**
116453-89-5 183872-68-6

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

IT 652-11-9P 19333-15-4P 52319-97-8P **92396-90-2P** 163968-99-8P
163969-16-2P 163969-17-3P 163969-19-5P 163969-21-9P 163969-23-1P
183872-52-8P 183872-54-0P 183872-58-4P 183872-64-2P 209161-29-5P
209161-32-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

IT 83218-82-0P 117753-12-5P 163968-91-0P 163969-00-4P 163969-01-5P
163969-07-1P 163969-11-7P 163969-15-1P 163969-20-8P 163969-26-4P
171118-94-8P 183872-48-2P 183872-49-3P 183872-51-7P 183872-56-2P
183872-57-3P 183872-59-5P 183872-66-4P 183872-67-5P 183973-61-7P

209161-25-1P

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

L113 ANSWER 2 OF 26 HCA COPYRIGHT 2004 ACS on STN

135:78227 Fluorescence energy transfer and intramolecular energy transfer in particles using novel compounds. Buechler, Kenneth F.; Noar, Joseph Barry; Tadesse, Lema (Biosite Diagnostics, Inc., USA). U.S. US 6251687-B1 20010626, 57 pp., Cont.-in-part of U.S. 5,763,189. (English). CODEN: USXXAM. APPLICATION: US 1995-409298 19950323. PRIORITY: US 1993-126367 19930924; US 1993-138708 19931018; US 1994-274534 19940712; US 1994-311098 19940923.

AB The invention describes the particles comprising an energy donor as a first component and a fluorescent dye as a second component positioned in said particles at an energy exchanging distance from one another, wherein the two components have a Stokes shift of greater than or equal to 50 nm, said particle having bound on its surface, a protein, polypeptide, nucleic acid, nucleotide or protein containing ligand analog are disclosed and claimed. In addition, novel fluorescent dyes are described which exhibit intramol. energy transfer for use to label various mols., proteins, polypeptides, nucleotides and nucleic acids or to incorporate into particles.

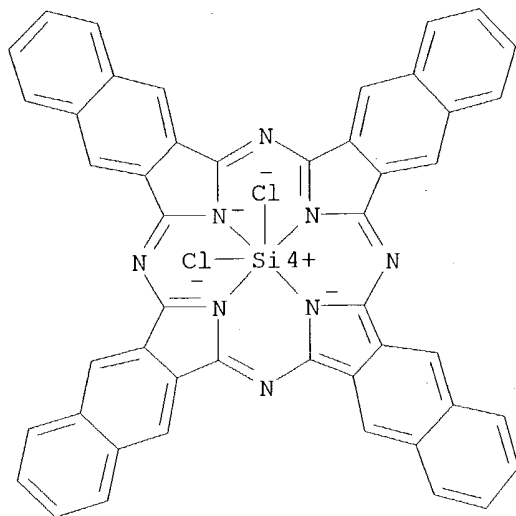
IT **92396-91-3**

RL: RCT (Reactant); RACT (Reactant or reagent)

(fluorescence energy transfer and intramol. energy transfer in particles using novel compds., manufacture and use in assay of biomol.)

RN 92396-91-3 HCA

CN Silicon, dichloro[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3'''-l:2''',3'''-q]porphyrinato(2-)-κN37,κN38,κN39,κN40]-, (OC-6-12)- (9CI) (CA INDEX NAME)

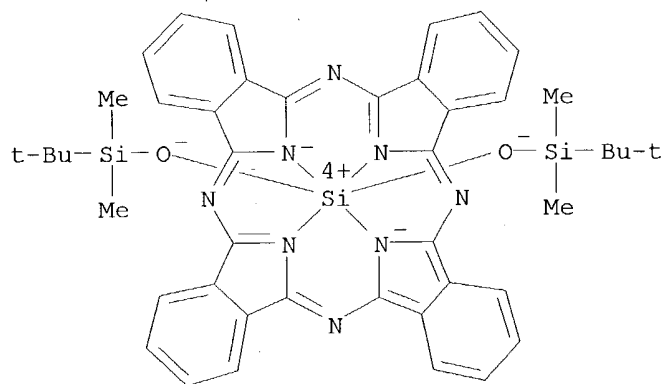


IT 67881-06-5P 92396-89-9P 92396-90-2P
163969-08-2P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent).
(intermediate; fluorescence energy transfer and intramol. energy
transfer in particles using novel compds., manufacture and use in assay of
biomol.)

RN 67881-06-5 HCA

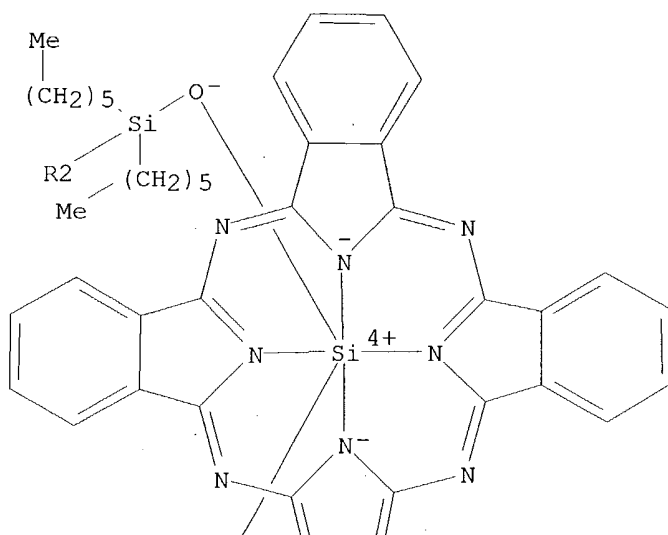
CN Silicon, bis[(1,1-dimethylethyl)dimethylsilanolato][29H,31H-
phthalocyaninato(2-)-κN29,κN30,κN31,κN32]-,
(OC-6-12)- (9CI) (CA INDEX NAME)



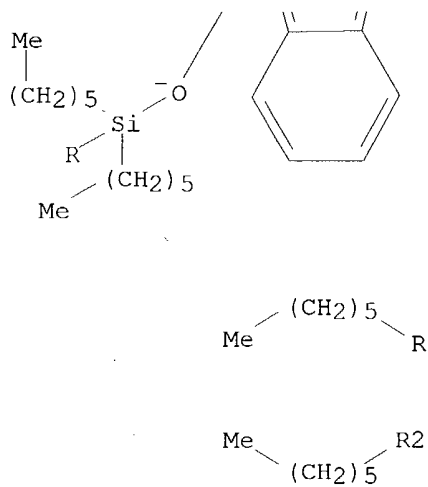
RN 92396-89-9 HCA

CN Silicon, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.k
appa.N32]bis(trihexylsilanolato)-, (OC-6-12)- (9CI) (CA INDEX NAME)

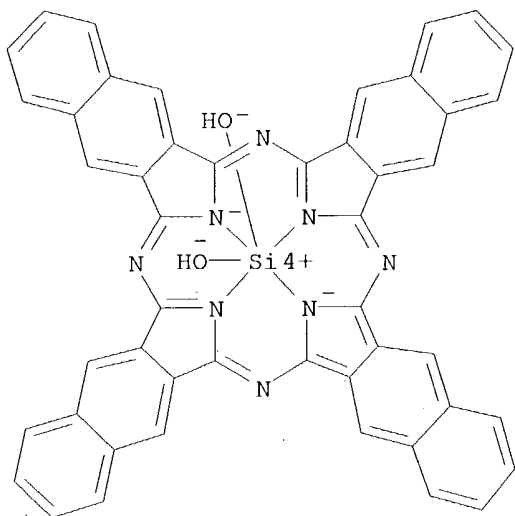
PAGE 1-A



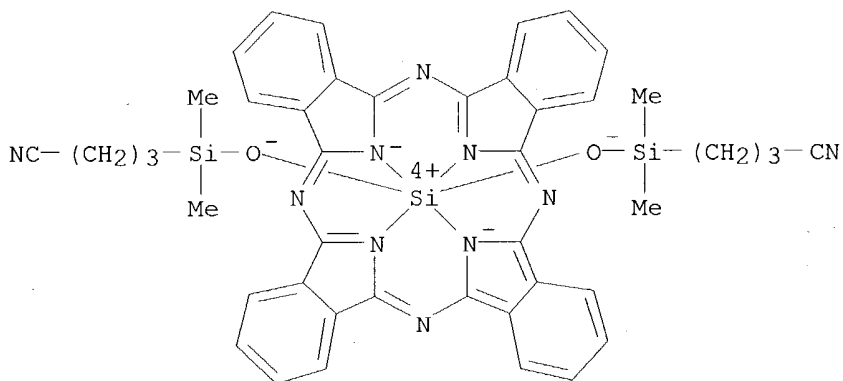
PAGE 2-A



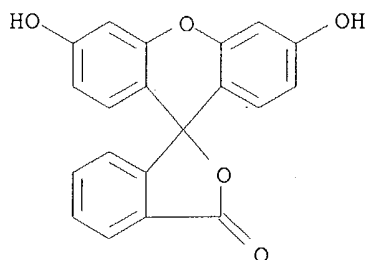
RN 92396-90-2 HCA
 CN Silicon, dihydroxy[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-1:2''',3'''-q]porphyrazinato(2-)-κN37,κN38,κN39,κN40]-, (OC-6-12)- (9CI) (CA INDEX NAME)



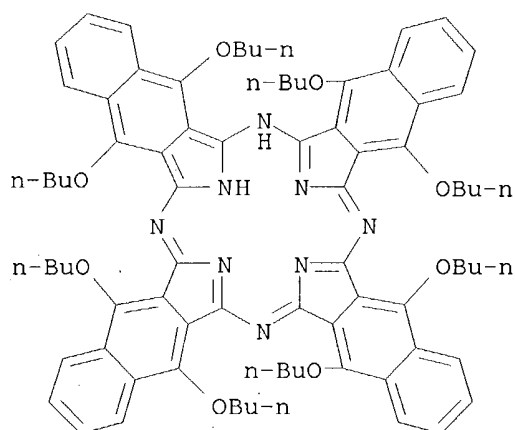
RN 163969-08-2 HCA
 CN Silicon, bis[4-[(hydroxy-κO)dimethylsilyl]butanenitrilato][29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,κN32]-, (OC-6-12)-(9CI) (CA INDEX NAME)



IT **2321-07-5D**, Fluorescein, ATP derivs., silicon phthalocyanine complexes **105528-25-4**
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reactant; fluorescence energy transfer and intramol. energy transfer in particles using novel compds., manufacture and use in assay of biomol.)
 RN 2321-07-5 HCA
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)
 (CA INDEX NAME)



RN 105528-25-4 HCA
 CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3'''-1:2''',3'''-q]porphyrazine,
 5,9,14,18,23,27,32,36-octabutoxy- (9CI) (CA INDEX NAME)



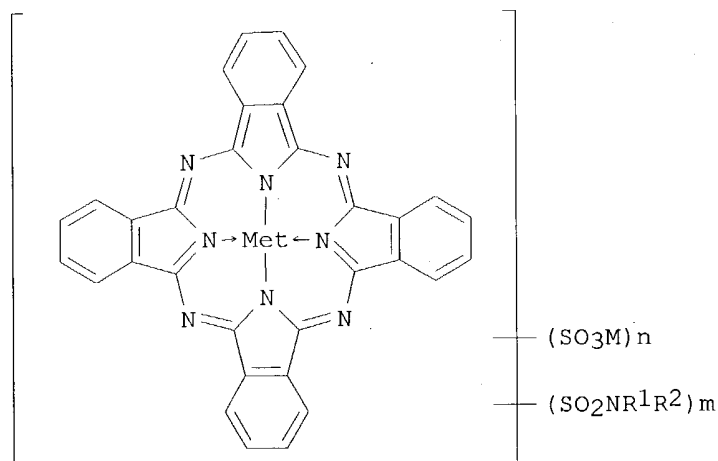
IC ICM G01N033-543
 ICS G01N033-53; B05B005-00
 NCL 436518000
 CC 41-10 (Dyes, Organic Pigments, Fluorescent Brighteners, and
Photographic Sensitizers)
 Section cross-reference(s): 9
 IT **92396-91-3**
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (fluorescence energy transfer and intramol. energy transfer in
 particles using novel compds., manufacture and use in assay of biomol.)
 IT 19333-15-4P, Silicon Phthalocyanine Dihydroxide 52319-97-8P
 53749-38-5P, (10-Carbomethoxydecyl)dimethylchlorosilane 63405-81-2P,
 5,6-Dichloro-1,3-diiminoisoindoline **67881-06-5P** 68812-20-4P
 83218-82-0P **92396-89-9P 92396-90-2P** 117753-12-5P
 121668-81-3P 149971-18-6P 153454-01-4P 163968-91-0P 163968-92-1P
 163968-99-8P, 4,9-Diethoxy-1,3-diiminobenz[f]isoindoline 163969-00-4P
 163969-07-1P **163969-08-2P** 163969-10-6P 163969-11-7P
 163969-15-1P 163969-16-2P 163969-17-3P 163969-19-5P 163969-20-8P
 163969-22-0P 163969-23-1P 163969-26-4P 183872-64-2P 183872-67-5P
 183872-69-7P 183872-70-0P 183872-72-2P 183872-98-2P 183872-99-3P
 183873-01-0P 183873-03-2P 183973-59-3P 209161-29-5P 346650-98-4P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
 (Reactant or reagent)
 (intermediate; fluorescence energy transfer and intramol. energy
 transfer in particles using novel compds., manufacture and use in assay of
 biomol.)

IT 50-00-0, Formaldehyde, reactions 68-26-8, all-trans-Retinol 75-78-5, Dichlorodimethylsilane 76-86-8, Triphenylchlorosilane 107-96-0, 3-Mercaptopropionic acid 119-64-2, 1,2,3,4-Tetrahydronaphthalene 140-66-9, 4-Octylphenol 597-52-4, Triethylsilanol 712-74-3, Benzene-1,2,4,5-tetracarbonitrile 1719-58-0, Chlorodimethylvinylsilane 1835-65-0, Tetrafluorophthalonitrile **2321-07-5D**, Fluorescein, ATP derivs., silicon phthalocyanine complexes 3468-11-9, 1,3-Diiminoisoindoline 3634-67-1, Chlorotrihexylsilane 4655-61-2 6554-98-9, trans-4-Hydroxystilbene 7646-78-8, Tin tetrachloride, reactions 7790-94-5, Chlorosulfonic acid 9004-74-4, Poly(ethylene glycol)methyl ether 10026-04-7, Silicon tetrachloride 10038-98-9, Germanium tetrachloride 10264-67-2 17196-12-2 18156-15-5, Chloro(3-cyanopropyl)dimethylsilane 18162-48-6, tert-Butyldimethylchlorosilane 18419-53-9 18643-08-8, Chlorodimethyloctadecylsilane 19333-10-9, Silicon phthalocyanine dichloride 20082-71-7, Chlorodimethylpentafluorophenylsilane 25322-68-3, Poly(ethylene glycol) 26857-61-4 32703-80-3, 4-tert-Butylphthalonitrile 36360-42-6, 3,6-Diphenylphthalonitrile 37623-03-3, 1,4-Diphenylnaphthalene-2,3-dicarbonitrile 41345-70-4 52199-35-6 74815-81-9, 2,3-Dibromo-6,7-dicyanonaphthalene 97241-14-0 102488-47-1 **105528-25-4** 116453-89-5, 1,4-Dibutoxynaphthalene-2,3-dicarbonitrile 116453-91-9 139152-08-2 163969-13-9 163969-21-9 183872-68-6, 4,7-Diethoxy-1,3-diiminoisoindoline
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reactant; fluorescence energy transfer and intramol. energy transfer in particles using novel compds., manufacture and use in assay of biomol.)

L113 ANSWER 3 OF 26 HCA COPYRIGHT 2004 ACS on STN

135:38954 Color filters, their manufacture by ink-jet printing, and liquid-crystal displays using them. Shiota, Kachihiro; Yamashita, Yoshihisa (Canon Inc., Japan). Jpn. Kokai Tokkyo Koho JP-2001159710A2 20010612, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-344028 19991203.

GI



AB The filters are manufactured by ink-jet printing blue inks containing phthalocyanine dyes I [Met = 2-4-valent metal ion, 2H; M = H, alkali metal, NH₄; R₁, R₂ = H, (un)substituted (un)saturated hydrocarbyl; R₁ ≠ H; m, n = 1-3; m + n ≤ 4] on transparent substrates to form colored

parts. The filters show good transparency and high light resistance and give LCD with good color display characteristics.

IT 16423-68-0, C.I. Acid Red 51 343797-94-4

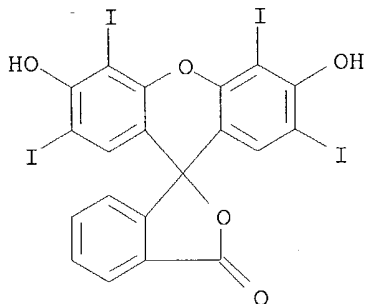
343797-95-5 343797-96-6 343797-97-7

RL: DEV (Device component use); USES (Uses)

(manufacture of transparent color filters by ink-jet printing of phthalocyanine dye-containing inks for LCD)

RN 16423-68-0 HCA

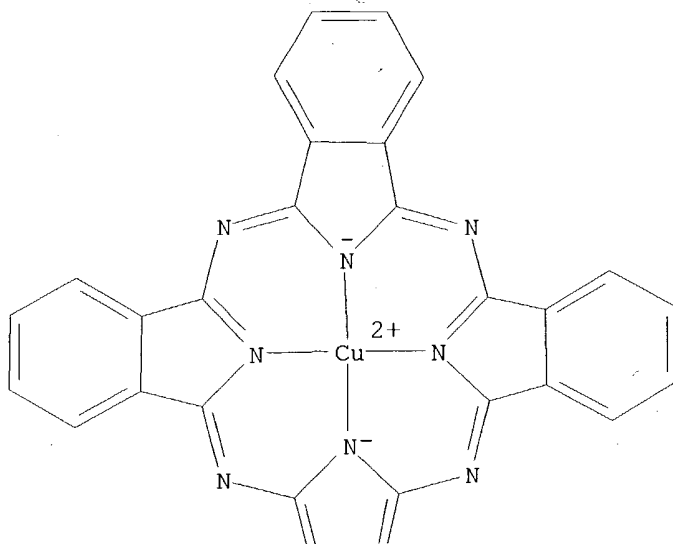
CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy-2',4',5',7'-tetraiodo-, disodium salt (9CI) (CA INDEX NAME)



●2 Na

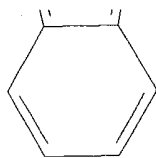
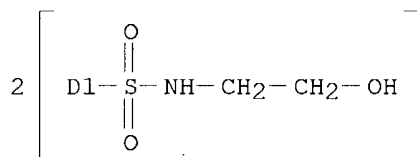
RN 343797-94-4 HCA

CN Cuprate(1-), [C,C-bis[[(2-hydroxyethyl)amino]sulfonyl]-29H,31H-phthalocyanine-C-sulfonato(3-)-κN29,κN30,κN31,κN32]-, sodium (9CI) (CA INDEX NAME)



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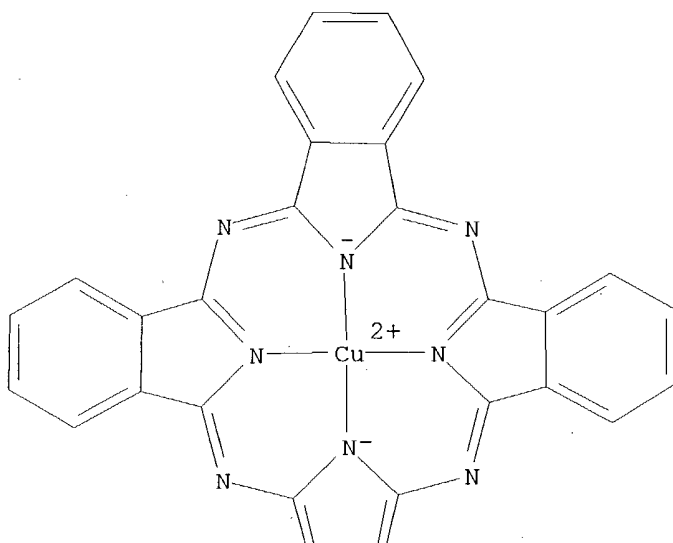
D1-SO₃⁻

PAGE 3-A

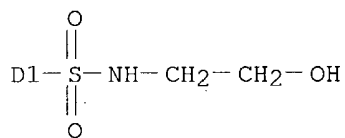
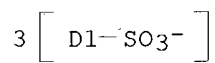
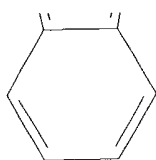


RN 343797-95-5 HCA
 CN Cuprate(3-), [C-[[(2-hydroxyethyl)amino]sulfonyl]-29H,31H-phthalocyanine-
 C,C,C-trisulfonato(5-)-κN29,κN30,κN31,κN32]-,
 trisodium (9CI) (CA INDEX NAME)

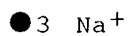
PAGE 1-A



PAGE 2-A



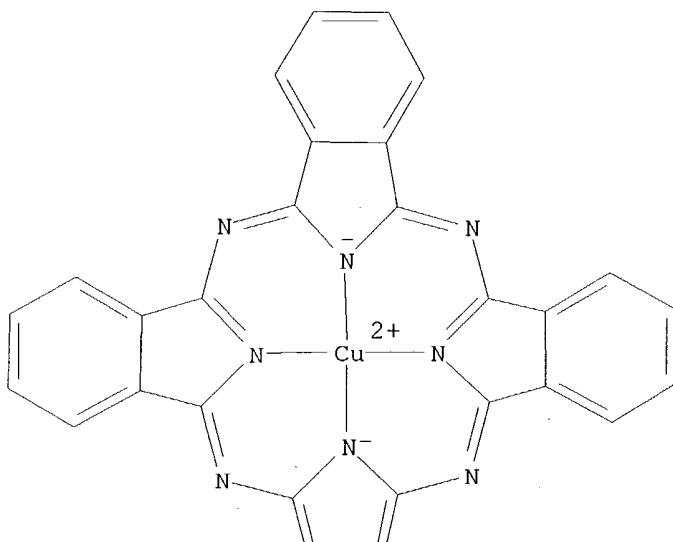
PAGE 3-A



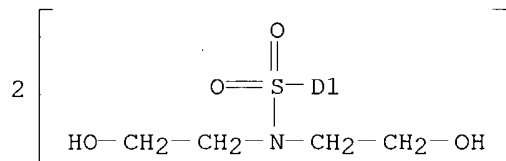
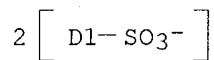
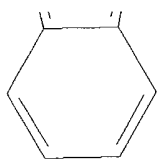
RN 343797-96-6 HCA
 CN Cuprate(2-), [C,C-bis[[bis(2-hydroxyethyl)amino]sulfonyl]-29H,31H-

phthalocyanine-C,C-disulfonato(6-)-κN29,κN30,κN31,.kappa
 .N32]-, disodium (9CI) (CA INDEX NAME)

PAGE 1-A



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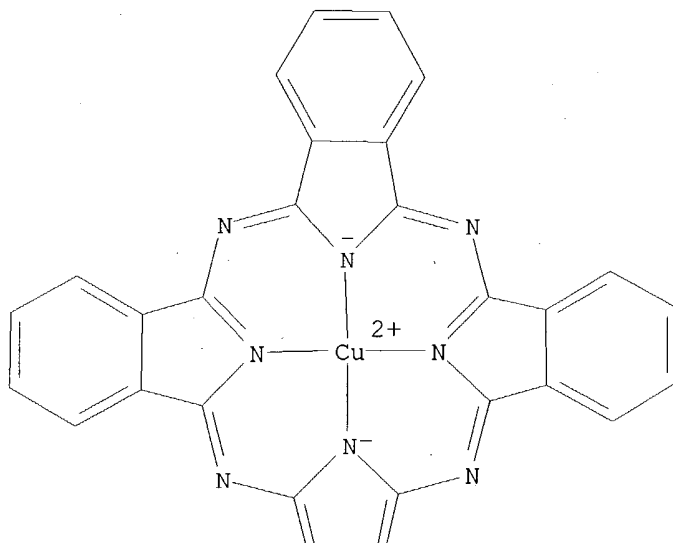


PAGE 3-A

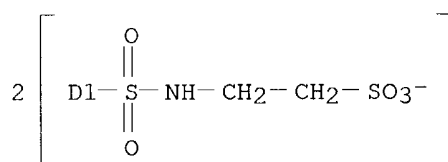
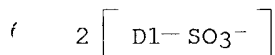
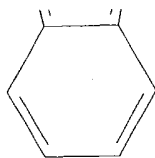
● 2 Na⁺

RN 343797-97-7 HCA
CN Cuprate(4-), [C,C-bis[[(2-sulfoethyl)amino]sulfonyl]-29H,31H-phthalocyanine-C,C-disulfonato(6-)-κN29,κN30,κN31,.kappa.N32]-, tetrasodium (9CI) (CA INDEX NAME)

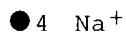
PAGE 1-A



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IT **343797-92-2P**

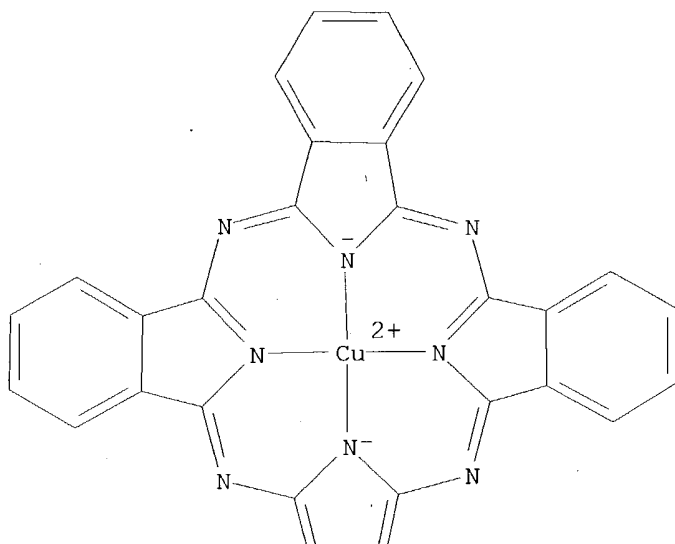
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(manufacture of transparent color filters by ink-jet printing of phthalocyanine dye-containing inks for LCD)

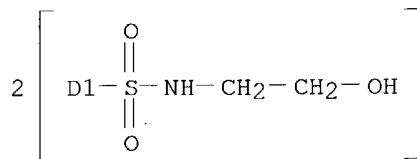
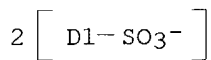
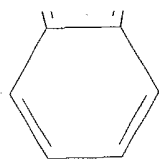
RN 343797-92-2 HCA

CN Cuprate(2-), [C,C-bis[[(2-hydroxyethyl)amino]sulfonyl]-29H,31H-phthalocyanine-C,C-disulfonato(4-)-κN29,κN30,κN31,.kappa.N32]-, disodium (9CI) (CA INDEX NAME)

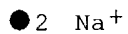
PAGE 1-A



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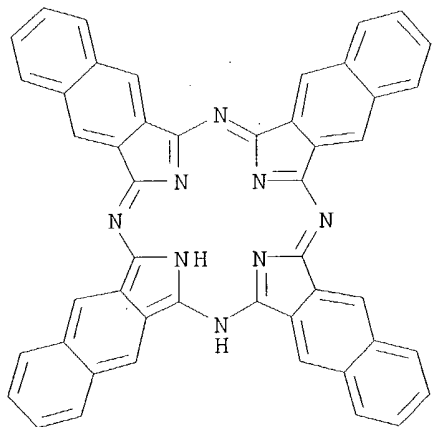
PAGE 3-A



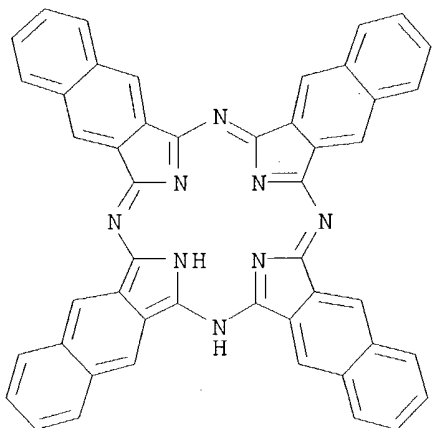
ICS G02F001-1335
CC 74-13 (Radiation Chemistry, Photochemistry, and **Photographic** and
Other **Reprographic** Processes)
Section cross-reference(s): **41**, 73
IT 3520-42-1, C.I. Acid Red 52 12220-28-9, C.I. Acid Red 289
16423-68-0, C.I. Acid Red 51 **343797-94-4**
343797-95-5 343797-96-6 343797-97-7
RL: DEV (Device component use); USES (Uses)
(manufacture of transparent color filters by ink-jet printing of
phthalocyanine dye-containing inks for LCD)
IT **343797-92-2P**
RL: DEV (Device component use); IMF (Industrial manufacture); PREP
(Preparation); USES (Uses)
(manufacture of transparent color filters by ink-jet printing of
phthalocyanine dye-containing inks for LCD)

L113 ANSWER 4 OF 26 HCA COPYRIGHT 2004 ACS on STN

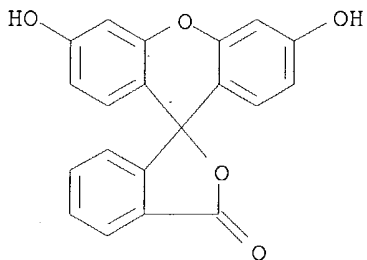
135:2542 Fluorescence energy transfer in particles. Buechler, Kenneth F.;
Noar, Joseph Barry; Tadesse, Lema (Biosite Diagnostics, Inc., USA). U.S.
US 6238931 B1 20010529, 30 pp., Cont.-in-part of U.S. Ser. No. 138,708,
abandoned. (English). CODEN: USXXAM. APPLICATION: US 1994-274534
19940712. PRIORITY: US 1993-126367 19930924; US 1993-138708 19931018.
AB Particles and methods for the detection or visualization of analytes using
fluorescence energy transfer are disclosed. Particles comprising an
energy donor as a first component and a fluorescent dye as a second
component positioned in said particles at an energy exchanging distance
from one another, wherein the two components have a Stokes shift of
greater than or equal to 50 nm, said particle having bound on its surface,
a protein, polypeptide, nucleic acid, nucleotide or protein containing ligand
analog are disclosed and claimed. A fluorescence immunoassay for human
chorionic gonadotropin (hCG) uses a conjugate of anti-hCG monoclonal
antibody and latex particles containing 1,1'-dihexyl-3,3,3',3'-
tetramethylindodicarbocyanine iodide and silicon 2,3-
naphthalocyanine bis(dimethylvinylsilyloxy) (preparation given).
IT **23627-89-6, Naphthalocyanine 23627-89-6D,**
Naphthalocyanine, substituted
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(fluorescence energy transfer in particles)
RN 23627-89-6 HCA
CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrzine
(9CI) (CA INDEX NAME)



RN 23627-89-6 HCA
 CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazine
 (9CI) (CA INDEX NAME)

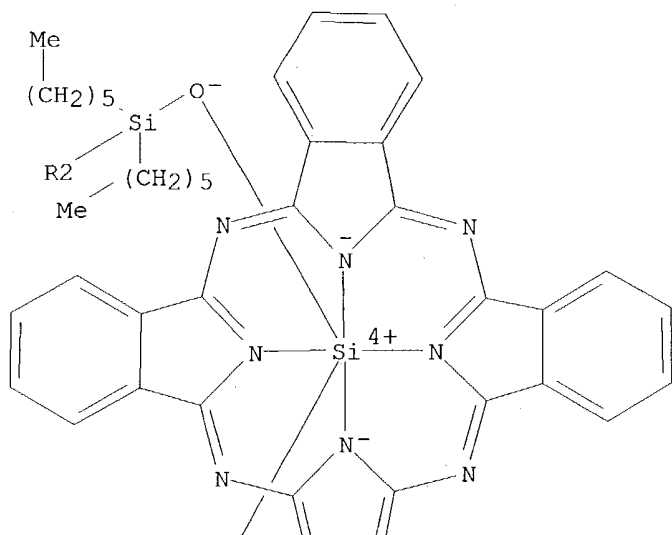


IT **2321-07-5, Fluorescein**
 RL: ARG (Analytical reagent use); PRP (Properties); ANST (Analytical study); USES (Uses)
 (fluorescence energy transfer in particles)
 RN 2321-07-5 HCA
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)
 (CA INDEX NAME)

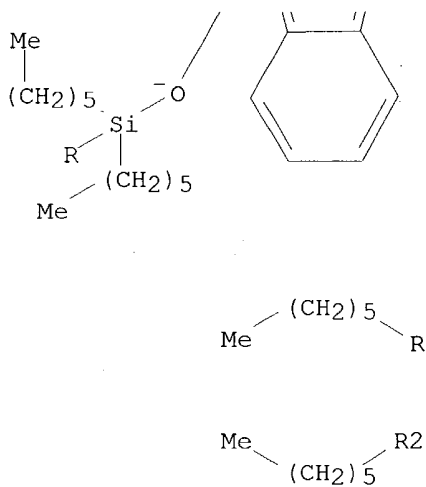


IT **92396-89-9P**
 RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
 (fluorescence energy transfer in particles)
 RN 92396-89-9 HCA
 CN Silicon, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.kappaappa.N32]bis(trihexylsilanolato)-, (OC-6-12)- (9CI) (CA INDEX NAME)

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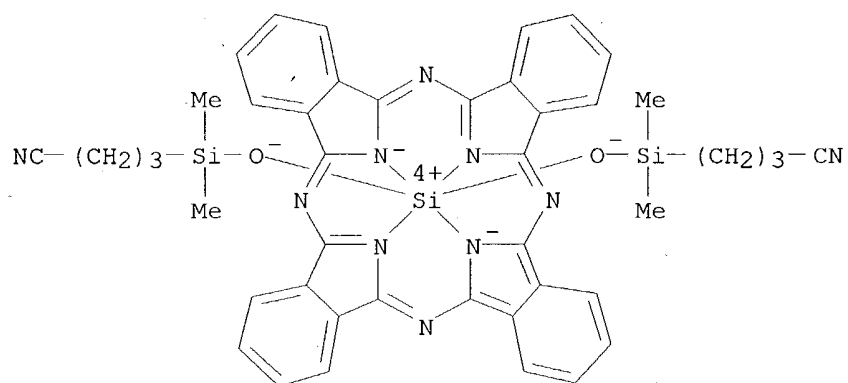


IT 163969-08-2P

RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(fluorescence energy transfer in particles)

RN 163969-08-2 HCA

CN Silicon, bis[4-[(hydroxy-κO)dimethylsilyl]butanenitrilato][29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,κN32]-,
(OC-6-12)-(9CI) (CA INDEX NAME)

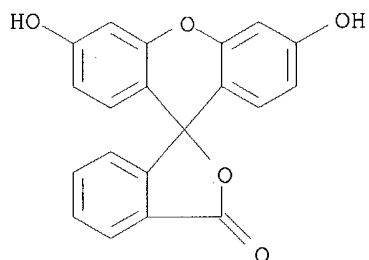


IT **2321-07-5D**, Fluorescein, reaction with ATP and phthalocyanine
compds. **92396-91-3**

RL: RCT (Reactant); RACT (Reactant or reagent)
(fluorescence energy transfer in particles)

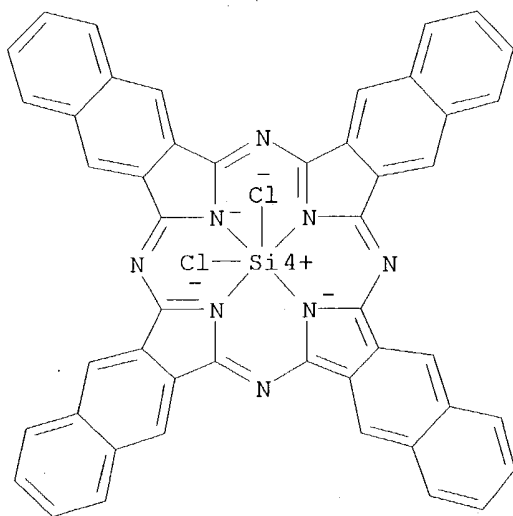
RN 2321-07-5 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)
(CA INDEX NAME)



RN 92396-91-3 HCA

CN Silicon, dichloro[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-1:2''',3'''-q]porphyrazinato(2-)-κN37,κN38,κN39,κN40]-, (OC-6-12)- (9CI) (CA INDEX NAME)



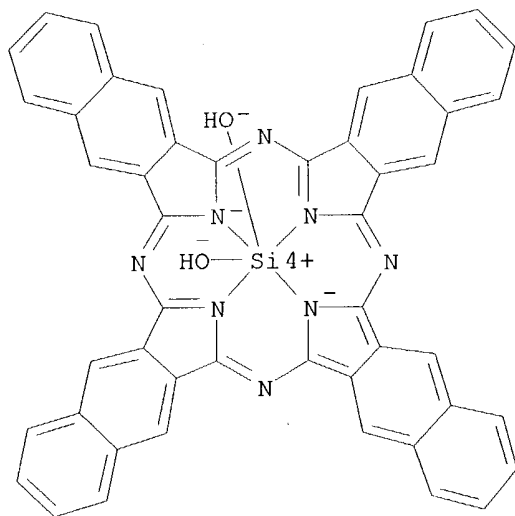
IT **92396-90-2P**

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(fluorescence energy transfer in particles)

RN 92396-90-2 HCA

CN Silicon, dihydroxy[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-1:2''',3'''-q]porphyrazinato(2-)-κN37,κN38,κN39,κN40]-, (OC-6-12)- (9CI) (CA INDEX NAME)



IC ICM G01N033-533

ICS G01N033-546; G01N033-552; C07K017-08

NCL 436546000

CC 9-5 (Biochemical Methods)

Section cross-reference(s): 2, 29, **41**, 73IT 479-61-8 574-93-6D, Phthalocyanine, substituted 23178-68-9D, 3,3'-Diethylthiatricarbocyanine, salts 23481-50-7D, 1,9-Dimethylmethylen blue, salts **23627-89-6**,**Naphthalocyanine 23627-89-6D, Naphthalocyanine**

, substituted 47676-39-1D, 1,1',3,3',3',3'-Hexamethylindotricarbocyanine, salts 47809-39-2D, salts 83683-61-8D, salts 127274-90-2D, salts 143236-82-2D, salts 163969-02-6D, salts 163969-03-7D, salts 163969-05-9D, salts 342046-44-0D, salts

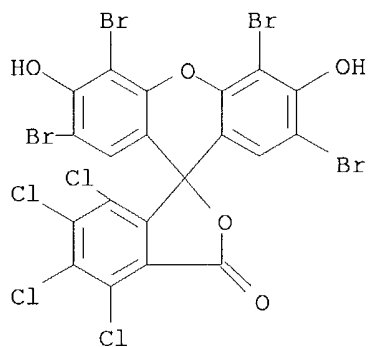
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (fluorescence energy transfer in particles)

IT 519-62-0, Chlorophyll B **2321-07-5**, Fluorescein 3071-70-3, 3,3'-Diethylthiatricarbocyanine iodide 14806-50-9, 3,3'-Diethyloxadicarbocyanine Iodide 16595-48-5, 1,1',3,3',3',3'-Hexamethylindotricarbocyanine perchlorate 17094-16-5 23178-67-8 23481-50-7 24796-94-9, Oxazine 1 Perchlorate 39001-62-2 39001-64-4 52199-35-6 53213-94-8, 3,3'-Dipropylthiadibocyanine iodide 70365-30-9 77474-65-8 78452-92-3 83218-82-0 83484-76-8 83678-65-3 85752-56-3 97807-64-2 116453-73-7 127274-91-3, 1,1'-Dioctadecyl-3,3',3',3'-tetramethylindodicarbocyanine perchlorate 129707-63-7 150749-57-8 163968-82-9 163968-86-3 163969-09-3 163969-13-9 163969-14-0 164106-16-5 342046-49-5 342046-58-6 342373-97-1

RL: ARG (Analytical reagent use); PRP (Properties); ANST (Analytical study); USES (Uses)

(fluorescence energy transfer in particles)

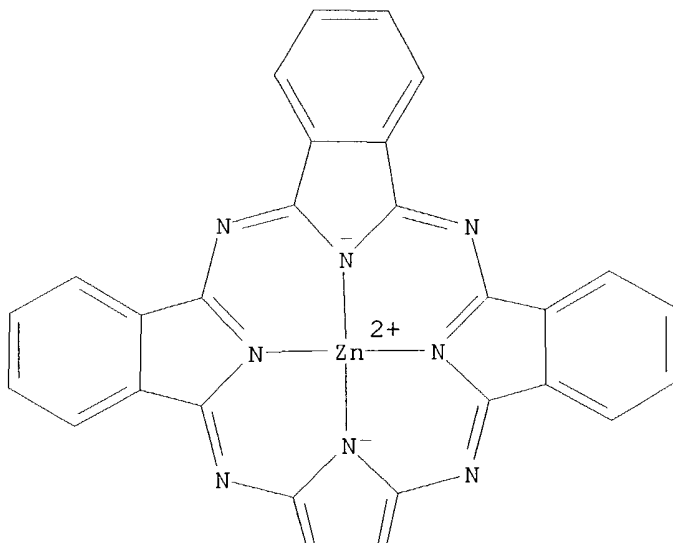
- IT 68812-20-4P **92396-89-9P** 163968-89-6P 163969-10-6P
RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(fluorescence energy transfer in particles)
- IT 163969-07-1P **163969-08-2P** 163969-12-8P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(fluorescence energy transfer in particles)
- IT 56-65-5D, ATP, reaction with fluorescein 68-26-8, all-trans-Retinol 75-78-5, Dichlorodimethylsilane 76-86-8, Triphenylchlorosilane 1585-90-6, N-(2-Hydroxyethyl)maleimide 1719-58-0, Chlorodimethylvinylsilane **2321-07-5D**, Fluorescein, reaction with ATP and phthalocyanine compds. 3634-67-1, Chlorotrihexylsilane 6554-98-9, trans-4-Hydroxystilbene 10026-04-7, Silicon tetrachloride 18156-15-5, Chloro(3-cyanopropyl)dimethylsilane 18419-53-9 19333-10-9, Silicon phthalocyanine dichloride 20082-71-7, Chlorodimethylpentafluorophenylsilane 53749-38-5, (10-Carbomethoxydecyl)dimethylchlorosilane **92396-91-3** 102488-47-1 163968-99-8, 4,9-Diethoxy-1,3-diiminobenz[f]isoindoline 342046-56-4 342373-96-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(fluorescence energy transfer in particles)
- IT 19333-15-4P, Silicon Phthalocyanine Dihydroxide **92396-90-2P** 163969-16-2P 163969-17-3P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(fluorescence energy transfer in particles)
- L113 ANSWER 5 OF 26 HCA COPYRIGHT 2004 ACS on STN
- 132:71457 Color filter for liquid-crystal display panel. Nakazawa, Koichiro; Shirota, Katsuhiko; Miyazaki, Takeshi; Kashiwazaki, Akio; Hirose, Masashi (Canon K. K., Japan). Eur. Pat. Appl. EP-965874 A2 19991222, 50 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 1999-111660 19990616. PRIORITY: JP 1998-171404 19980618.
- AB A color filter for a liquid-crystal display panel comprises red, green, and blue color elements with a relationship between a tristimulus value (Y) of a white color synthesized by the color elements and an area (S) for a triangle formed by connecting the xy chromaticity in the standard C light source of the above color elements each obtained based on a XYZ color system with a 2° visual field (JIS Z8701) meeting the condition of $Y \geq -255 \cdot S + 54$.
- IT **18472-87-2**, C.I. Acid Red 92 **245726-55-0**
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(liquid-crystal display panels with color filters containing)
- RN 18472-87-2 HCA
- CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',4',5',7'-tetrabromo-4,5,6,7-tetrachloro-3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)



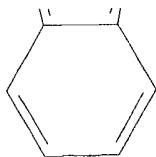
●2 Na

RN 245726-55-0 HCA
 CN Zincate(2-), [C-[[[(acetylamino)-4-[[5-(aminocarbonyl)-1-butyl-1,6-dihydro-2-hydroxy-4-methyl-6-oxo-3-pyridinyl]azo]-3-sulfohenyl]amino]sulfonyl]-C-(aminosulfonyl)-29H,31H-phthalocyanine-C-sulfonato(4-)-κN29,κN30,κN31,κN32]-, disodium (9CI) (CA INDEX NAME)

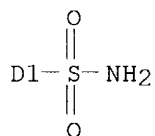
PAGE 1-A



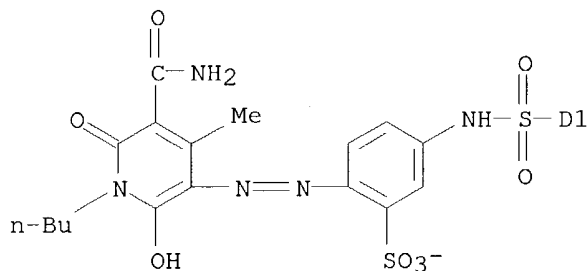
PAGE 2-A



D1-NH-Ac

D1-SO₃⁻

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● 2 Na⁺

IC ICM G02F001-1335
 ICS G02B005-22; C09D011-00
 CC 74-13 (Radiation Chemistry, Photochemistry, and **Photographic** and
 Other **Reprographic** Processes)
 Section cross-reference(s): 73
 IT 147-14-8D, Copper phthalocyanine, sulfonate-sulfonamide derivs.
 1330-39-8, C.I. Direct Blue 87 12220-28-9, C.I. Acid Red 289
 12220-47-2, C.I. Acid Red 315 12222-04-7, C.I. Direct Blue 199
 14320-04-8D, Zinc phthalocyanine, sulfonate-sulfonamide derivs.
18472-87-2, C.I. Acid Red 92 26603-03-2D, sulfonic acid derivs.,
 sodium salts 245724-63-4 245724-65-6 245724-68-9 **245726-55-0**
 245761-49-3 245761-53-9 245761-55-1 245761-66-4 247103-66-8D,
 sulfonic acid derivs., sodium salts 247103-69-1D, sulfonic acid derivs.,
 sodium salts
 RL: DEV (Device component use); TEM (Technical or engineered material)

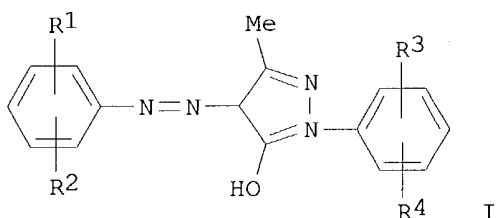
use); USES (Uses)

(liquid-crystal display panels with color filters containing)

L113 ANSWER 6 OF 26 HCA COPYRIGHT 2004 ACS on STN

131:279367 Ink, color filter, liquid crystal panel, and computer, and process for producing color filter. Kashiwazaki, Akio; Shirota, Katsuhiro; Nakazawa, Koichiro; Hirose, Masashi; Yokoyama, Mayumi; Yamashita, Yoshihisa (Canon Kabushiki Kaisha, Japan). Eur. Pat. Appl. EP 947859A1 19991006, 33 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 1999-106587 19990331. PRIORITY: JP 1998-86227 19980331.

GI



AB The invention relates to an ink for ink-jet recording, a color filter of a liquid crystal color display device used in color television, personal computers and the like, a process for producing the color filter and a liquid crystal panel employing the color filter. Provided is a novel ink which is suitable for producing a color filter by an ink-jet system. The ink comprises a pyrazolone dye (I), where R1 and R2 are each independently a H atom, an OH group, a halogen atom, a linear or branched alkyl group having 1 to 5 C atoms, a nitro group, a CF3 group or an SO3(M1) group, where M1 is an alkali metal or NH4; both R3 and R4 are an SO3(M2) group, where M2 is an alkali metal or NH4.

IT **245726-55-0**

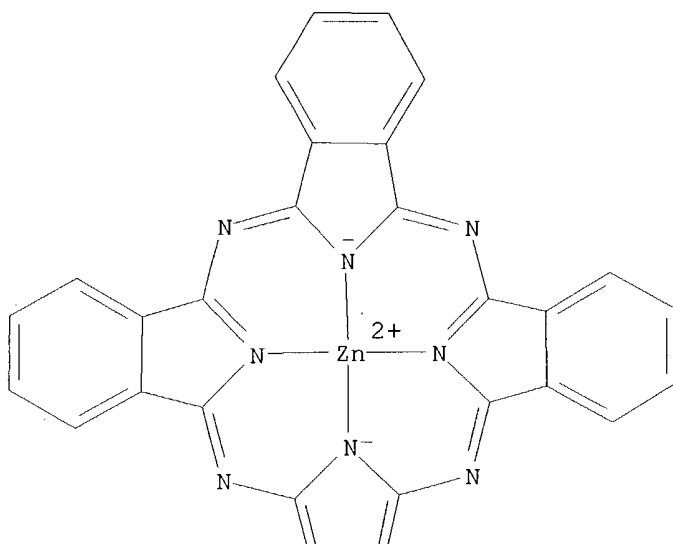
RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(preparation of color filter of liquid crystal display device using)

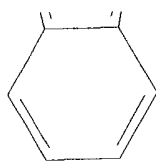
RN 245726-55-0 HCA

CN Zincate(2-), [C-[[[(acetylamino)-4-[[5-(aminocarbonyl)-1-butyl-1,6-dihydro-2-hydroxy-4-methyl-6-oxo-3-pyridinyl]azo]-3-sulfohenyl]amino]sulfonyl]-C-(aminosulfonyl)-29H,31H-phthalocyanine-C-sulfonato(4-)-κN29,κN30,κN31,κN32]-, disodium (9CI) (CA INDEX NAME)

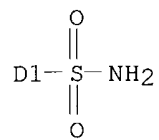
PAGE 1-A



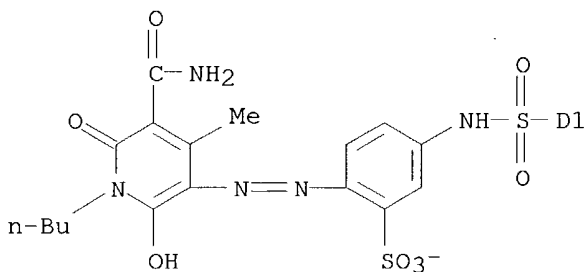
PAGE 2-A



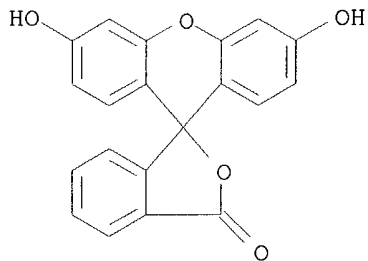
D1-NH-Ac

D1-SO₃⁻

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● 2 Na⁺

IT **518-47-8**, C.I. Acid Yellow 73
 RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (preparation of ink containing pyrazolone dye for ink-jet recording or color filter of liquid crystal display device using)
 RN 518-47-8 HCA
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)



● 2 Na

IC ICM G02B005-22
 ICS G02F001-1335; C09B029-50
 CC 74-13 (Radiation Chemistry, Photochemistry, and **Photographic** and Other **Reprographic** Processes)
 Section cross-reference(s): **41**, **42**
 IT **245726-55-0**
 RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (preparation of color filter of liquid crystal display device using)
 IT **518-47-8**, C.I. Acid Yellow 73 219679-25-1, N-Methylolacrylamide-2-(dimethylamino)ethyl methacrylate-methyl methacrylate-2-hydroxyethyl methacrylate-acrylic acid copolymer 245724-59-8 245724-60-1
 245724-61-2 245724-62-3 245724-63-4 245724-64-5 245724-65-6
 245724-66-7 245724-67-8 245724-68-9 245724-69-0 245724-70-3
 245724-72-5
 RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(preparation of ink containing pyrazolone dye for ink-jet recording or color filter of liquid crystal display device using)

L113 ANSWER 7 OF 26 HCA COPYRIGHT 2004 ACS on STN

129:317583 Hybrid phthalocyanine derivatives and their uses in immunoassays and nucleic acid assays. Buechler, Kenneth F.; Noar, Joseph B.; Tadesse, Lema (Biosite Diagnostics Incorporated, USA). U.S. ~~US-5824799~~A 19981020, 57 pp., Cont.-in-part of U.S. Ser. No. 274,534. (English). CODEN: USXXAM. APPLICATION: US 1996-620597 19960322. PRIORITY: US 1993-126367 19930924; US 1993-138708 19931018; US 1994-274534 19940712; US 1994-311098 19940923; US 1995-409825 19950323.

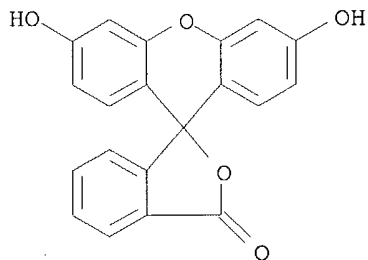
AB Water soluble hybrid phthalocyanine derivs. having (1) at least one donor subunit with a desired excitation peak and (2) at least one acceptor subunit with a desired emission peak, wherein the derivs. are capable of intramol. energy transfer from the donor subunit to the acceptor subunit, are synthesized. Such derivs. also may contain an electron transfer subunit. Axial ligands may be covalently bound to the metals contained in the water soluble hybrid phthalocyanine derivs. Ligands, ligand analogs, polypeptides, proteins, and nucleic acids can be linked to the axial ligands of the dyes to form dye conjugates useful in immunoassays and nucleic acid assays.

IT **2321-07-5**

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

RN 2321-07-5 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)
(CA INDEX NAME)



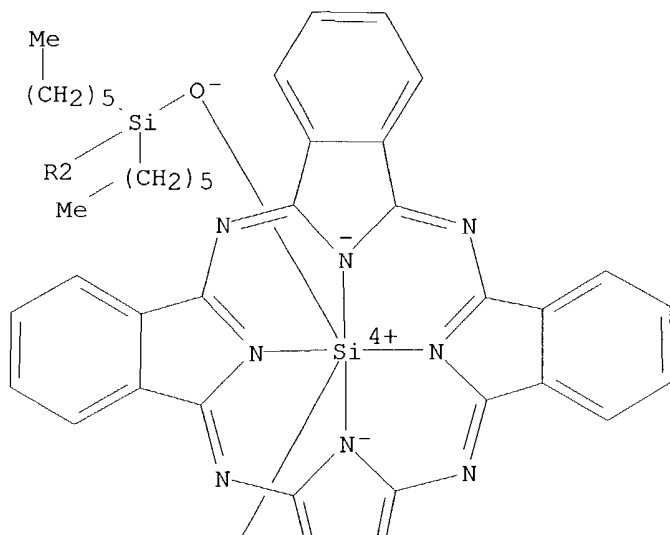
IT **92396-89-9P**

RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

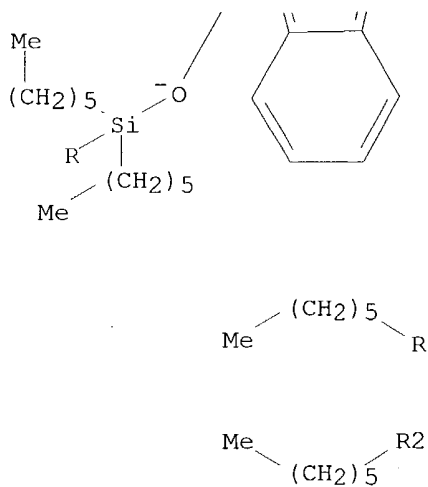
RN 92396-89-9 HCA

CN Silicon, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.kappaappa.N32]bis(trihexylsilanolato)-, (OC-6-12)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



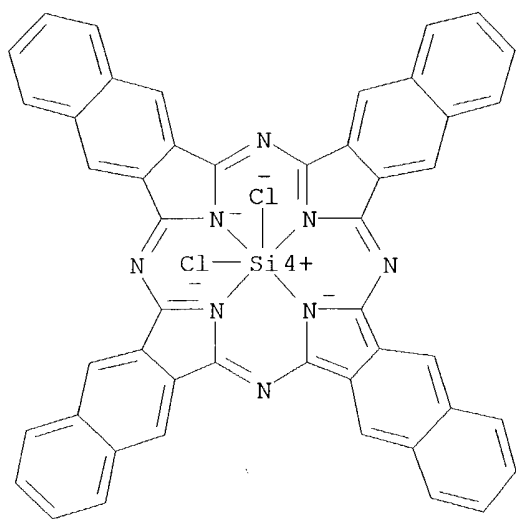
IT 92396-91-3 105528-25-4

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

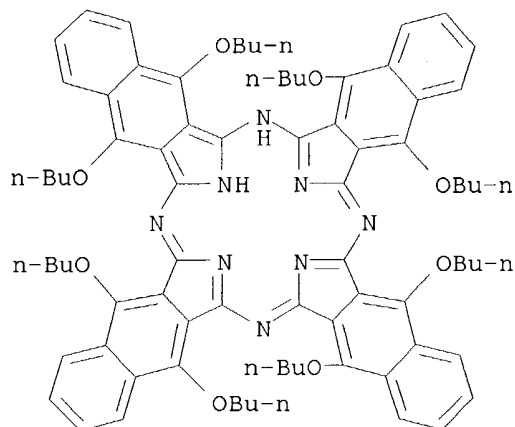
RN 92396-91-3 HCA

CN Silicon, dichloro[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3'''-1:2''',3'''-q]porphyrazinato(2-)-κN37,κN38,κN39,κN40]-, (OC-6-12)- (9CI) (CA INDEX NAME)



RN 105528-25-4 HCA

CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazine,
5,9,14,18,23,27,32,36-octabutoxy- (9CI) (CA INDEX NAME)



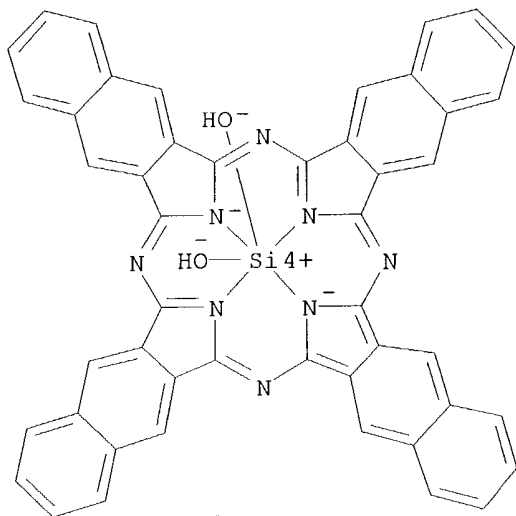
IT 92396-90-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and
nucleic acid assays)

RN 92396-90-2 HCA

CN Silicon, dihydroxy[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-
q]porphyrazinato(2-)-κN37,κN38,κN39,κN40]-,
(OC-6-12)- (9CI) (CA INDEX NAME)



IT **209161-25-1P**

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

RN 209161-25-1 HCA

CN Silicon, bis[3-[(hydroxy-κO)dimethylsilyl]propanenitrilato][29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,κN32]-,
(OC-6-12)- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM C09B047-00

ICS C09B047-30; C07D487-22

NCL 540128000

CC 41-7 (Dyes, Organic Pigments, Fluorescent Brighteners, and
Photographic Sensitizers)

IT 514-73-8 519-62-0 **2321-07-5** 3071-70-3 16595-48-5
23178-67-8 23481-50-7 24796-94-9 26529-11-3 39001-62-2
52199-35-6 53213-94-8 70365-30-9 83484-76-8 83768-56-3
85752-56-3 97148-81-7 97807-64-2 116453-73-7 127274-91-3
129707-63-7 150749-57-8 163968-82-9 163968-85-2 171118-93-7
195203-87-3 209161-37-5 209161-39-7

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

IT 68-26-8P, Retinol 68812-20-4P **92396-89-9P** 163968-88-5P
163968-89-6P 163968-92-1P 163968-94-3P 163968-95-4P 163969-09-3P
163969-10-6P 163969-14-0P 183872-63-1P 209161-30-8P 209161-31-9P
209161-33-1P

RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST
(Analytical study); PREP (Preparation); USES (Uses)
(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

IT 75-78-5 76-86-8 597-52-4 1631-83-0 1719-58-0 1835-65-0
3468-11-9 3634-67-1 6554-98-9 7646-78-8, reactions 10026-04-7
10038-98-9 10264-67-2 17196-12-2 18156-15-5 19333-10-9
20082-71-7 26857-61-4 32703-80-3 37623-03-3 53749-38-5
74815-81-9 **92396-91-3** 102488-47-1 **105528-25-4**
116453-89-5 183872-68-6

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

IT 652-11-9P 19333-15-4P 52319-97-8P **92396-90-2P** 163968-99-8P
163969-16-2P 163969-17-3P 163969-19-5P 163969-21-9P 163969-23-1P
183872-52-8P 183872-54-0P 183872-58-4P 183872-64-2P 209161-29-5P
209161-32-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

IT 83218-82-0P 117753-12-5P 163968-91-0P 163969-00-4P 163969-01-5P
163969-07-1P 163969-11-7P 163969-15-1P 163969-20-8P 163969-26-4P
171118-94-8P 183872-48-2P 183872-49-3P 183872-51-7P 183872-56-2P
183872-57-3P 183872-59-5P 183872-66-4P 183872-67-5P 183973-61-7P

209161-25-1P

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

L113 ANSWER 8 OF 26 HCA COPYRIGHT 2004 ACS on STN

127:88091 Ink-jet printing method using ink containing water-soluble dye.

Owatari, Akio; Onishi, Hiroyuki (Seiko Epson Corp., Japan). Jpn. Kokai Tokkyo Koho JP-09123594, A2 19970513 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-283787 19951031.

AB Ink-jet printing method using (1) an ink with pH ≥ 7 containing a water-soluble dye with COOX and/or PO₃X (X = H, Li, K, Na, ammonium, amine) groups, a water-soluble organic solvent, and water, and (2) a receptor having

an ink receiving layer with pH ≤ 7 containing porous alumina particles is claimed. The method gives clear full-color images with good storage stability under high moisture conditions.

IT **173429-41-9 191475-67-9**

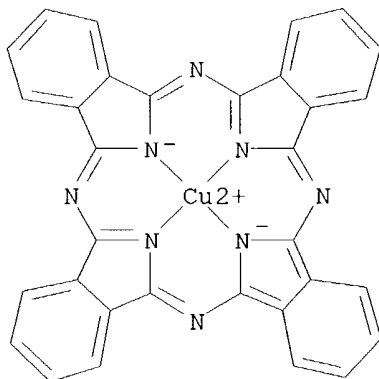
RL: TEM (Technical or engineered material use); USES (Uses)

(ink-jet printing method using water-soluble dye-containing ink and alumina-containing receptor)

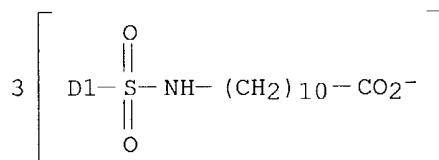
RN 173429-41-9 HCA

CN Cuprate(4-), [[11,11',11''-[(C-sulfo-29H,31H-phthalocyanine-C,C,C-triyl- κ N29, κ N30, κ N31, κ N32)tris(sulfonylimino)]tris[undecanoato]](6-)]-, ammonium trihydrogen (9CI) (CA INDEX NAME)

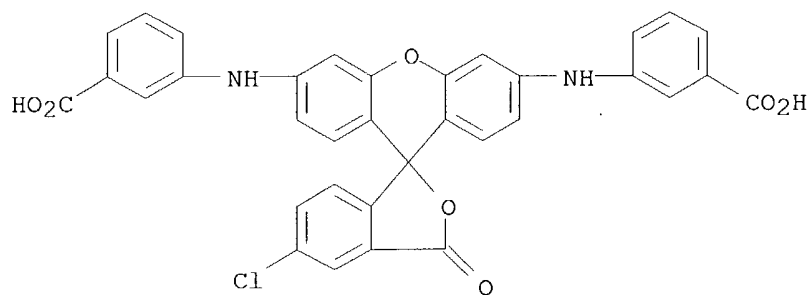
PAGE 1-A

D1-SO₃⁻

PAGE 2-A

● 3 H⁺● NH₄⁺

RN 191475-67-9 HCA
 CN Benzoic acid, 3,3'-[(5-chloro-3-oxospiro[isobenzofuran-1(3H),9'-[9H]xanthene]-3',6'-diyl)diimino]bis-, diammonium salt (9CI) (CA INDEX NAME)



● 2 NH₃

IC ICM B41M005-00
ICS B41M005-00; B41J002-01; C09D011-00
CC 74-6 (Radiation Chemistry, Photochemistry, and **Photographic** and
Other **Reprographic** Processes)
Section cross-reference(s): **41**
IT 140668-23-1 145687-46-3 **173429-41-9 191475-67-9**
191475-69-1 191475-71-5 191475-73-7
RL: TEM (Technical or engineered material use); USES (Uses)
(ink-jet printing method using water-soluble dye-containing ink and
alumina-containing receptor)

L113 ANSWER 9 OF 26 HCA COPYRIGHT 2004 ACS on STN

124:205237 Inks with good storage stability and jet printing using them and
printing apparatus for the inks. Yamamoto, Mayumi (Canon Kk, Japan).
Jpn. Kokai Tokkyo Koho JP=07305014=A2: 19951121 Heisei, 17 pp. (Japanese).
CODEN: JKXXAF. APPLICATION: JP 1994-117425 19940509.

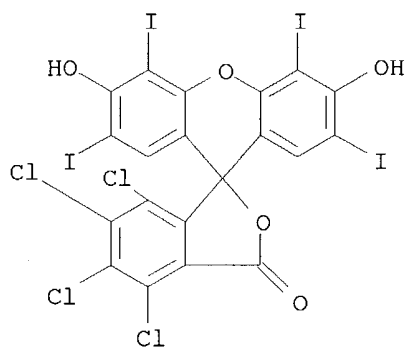
AB Title inks with resistance to nozzle clogging contain H₂O-soluble dyes, liquid
media, C₈-17 fatty acid salts, and H₂O-soluble organic compds. containing C_≥6
hydrocarbon groups and ≥ 2 N and are useful for prints with good
sharpness and water resistance. An ink containing ethylene glycol 10,
glycerol 10, urea 10, Me₂CHOH 3, phenyltriethylenetetramine 2, Na
caprylate 0.3, C.I. Acid Red 87 2, and H₂O 63.7 parts was storage stable
and exhibited prints with sharp edges and no feathering.

IT **632-68-8**, C.I. Acid Red 94 **12225-39-7**, C.I. Reactive
Blue 15 **12238-09-4**, C.I. Reactive Blue 7 **18472-87-2**,
C.I. Acid Red 92

RL: TEM (Technical or engineered material use); USES (Uses)
(jet-printing inks with good storage stability containing; for prints with
good water resistance and sharpness)

RN 632-68-8 HCA

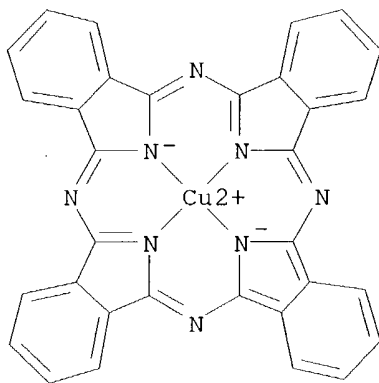
CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 4,5,6,7-tetrachloro-3',6'-
dihydroxy-2',4',5',7'-tetraiodo-, dipotassium salt (9CI) (CA INDEX NAME)



● 2 K

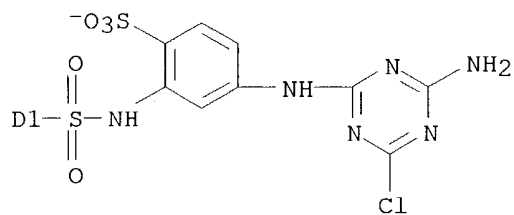
RN 12225-39-7 HCA
 CN Cuprate(4-), [C-[[[5-[(4-amino-6-chloro-1,3,5-triazin-2-yl)amino]-2-sulphophenyl]amino]sulfonyl]-29H,31H-phthalocyanine-C,C,C-trisulfonato(6-)-κN29,κN30,κN31,κN32]-, tetrasodium (9CI) (CA INDEX NAME)

PAGE 1-A



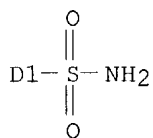
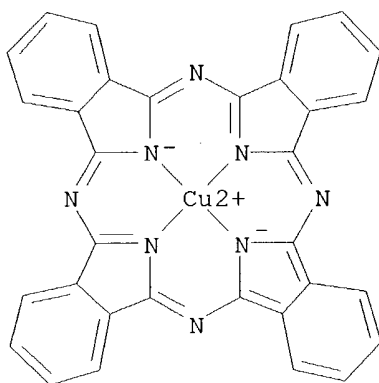
3 [D1-SO₃⁻]

PAGE 2-A

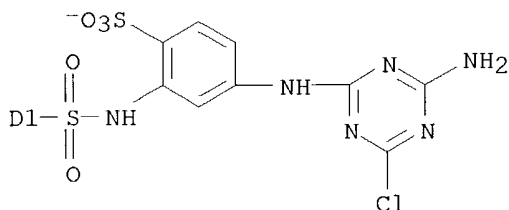
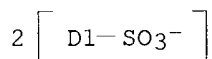
●4 Na⁺

RN 12238-09-4 HCA
 CN Cuprate(3-), [C-[[[5-[(4-amino-6-chloro-1,3,5-triazin-2-yl)amino]-2-sulfophenyl]amino]sulfonyl]-C-(aminosulfonyl)-29H,31H-phthalocyanine-C,C-disulfonato(5-)-κN29,κN30,κN31,κN32]-, trihydrogen
 (9CI) (CA INDEX NAME)

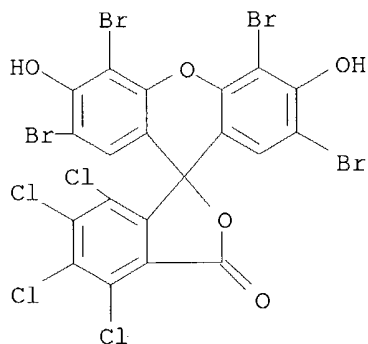
PAGE 1-A



PAGE 2-A

● 3 H⁺

RN 18472-87-2 HCA
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',4',5',7'-tetrabromo-
 4,5,6,7-tetrachloro-3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)



● 2 Na

IC ICM C09D011-00
 ICS B41J002-01; B41M005-00
 CC 42-12 (Coatings, Inks, and Related Products)
 Section cross-reference(s): 74
 IT 629-25-4, Sodium laurate **632-68-8**, C.I. Acid Red 94 1002-62-6,
 Sodium caprate 1324-58-9, C.I. Direct Blue 108 2437-23-2, Ammonium
 laurate 3700-59-2, Lauryldiethylenetriamine 5538-95-4,
 Laurylaminopropylamine 5972-76-9, Ammonium caprylate 6843-97-6, Lebon
 15 8005-03-6, C.I. Acid Black 2 12220-28-9, C.I. Acid Red 289
 12222-04-7, C.I. Direct Blue 199 **12225-39-7**, C.I. Reactive Blue
 15 12236-85-0, C.I. Reactive Blue 14 **12238-09-4**, C.I. Reactive
 Blue 7 14047-60-0, Sodium pelargonate 16530-70-4, Ammonium caprate
18472-87-2, C.I. Acid Red 92 30989-89-0,
 Tetradecyldiethylenetriamine 32582-95-9, Ammonium undecanoate
 56166-93-9, Lauryltetraethylenepentamine 63718-65-0, Ammonium

pelargonate 91301-74-5, Lebon 50 157609-34-2 172210-93-4
 172451-43-3, Lebon LAG 40 173268-66-1, Eleminol Ran 30 174460-80-1
 174460-81-2

RL: TEM (Technical or engineered material use); USES (Uses)
 (jet-printing inks with good storage stability containing; for prints with
 good water resistance and sharpness)

L113 ANSWER 10 OF 26 HCA COPYRIGHT 2004 ACS on STN

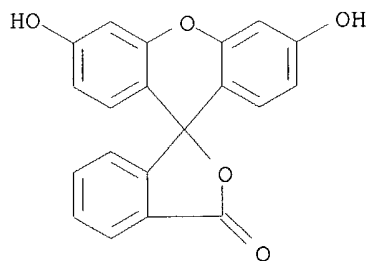
124:4485 Fluorescence energy transfer and intramolecular energy transfer in
 particles using novel compounds. Buechler, Kenneth Francis; Noar, Joseph
 Barry; Tadesse, Lema (Biosite Diagnostics Inc., USA). PCT Int. Appl. WO
 9508772-A1 19950330, 138 pp. DESIGNATED STATES: W: AU, CA, JP; RW: AT,
 BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English).
 CODEN: PIXXD2. APPLICATION: WO 1994-US10826 19940923. PRIORITY: US
 1993-126367 19930924; US 1993-138708 19931018; US 1994-274534 19940712.
 AB Particles and methods are disclosed for the detection or visualization of
 analytes, including nucleic acids by using fluorescence energy transfer or
 intramol. energy transfer. Particles comprising an energy donor as a
 first component and a fluorescent dye as a second component positioned in
 said particles at an energy exchanging distance from one another, wherein
 the two components have a Stokes shift of ≥ 50 nm, said particle
 having bound on its surface, a protein, polypeptide, nucleic acid,
 nucleotide or protein containing ligand analog are disclosed and claimed. In
 addition, novel fluorescent dyes are described which exhibit intramol. energy
 transfer for use in labeling various mols., proteins, polypeptides,
 nucleotides and nucleic acids or incorporating into particles. Many novel
 phthalocyanine derivs. and hybrid phthalocyanine derivs. are disclosed and
 claimed. Such derivs. also may contain an electron transfer subunit.
 Axial ligands may be covalently bound to the metals contained in the
 hybrid phthalocyanine derivs. Numerous compds. capable of intramol.
 energy transfer as well as compds. for fluorescence energy transfer are
 claimed.

IT 2321-07-5 163968-87-4 171118-92-6D, reaction
 with silicon phthalocyanine

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (fluorescence and intramol. energy transfer in particles for biochem.
 anal.)

RN 2321-07-5 HCA

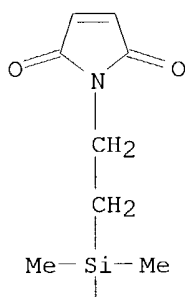
CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)
 (CA INDEX NAME)



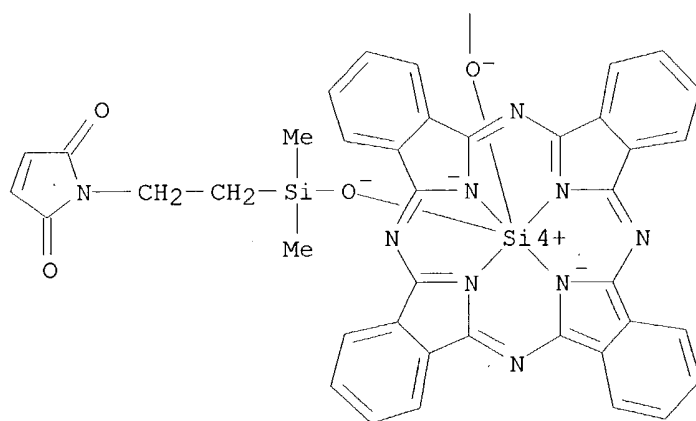
RN 163968-87-4 HCA

CN Silicon, bis[1-[2-(hydroxydimethylsilyl)ethyl]-1H-pyrrole-2,5-dionato-
 O1][29H,31H-phthalocyaninato(2-)-N29,N30,N31,N32]-, (OC-6-12)- (9CI) (CA
 INDEX NAME)

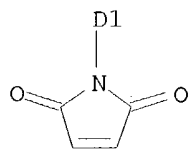
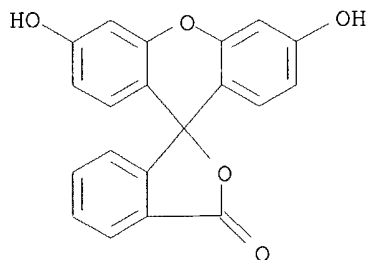
PAGE 1-A



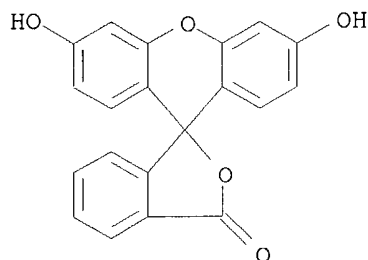
PAGE 2-A



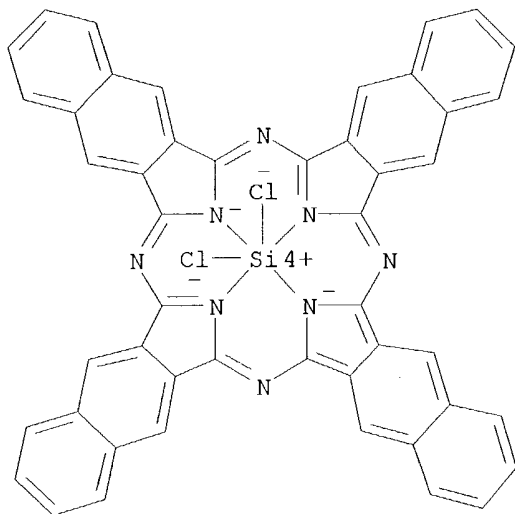
RN 171118-92-6 HCA
 CN 1H-Pyrrole-2,5-dione, 1-[3',6'-dihydroxy-3-oxospiro[isobenzofuran-1(3H),9'-[9H]xanthen]-5(or 6)-yl]- (9CI) (CA INDEX NAME)



IT **2321-07-5D**, complex with ATP **92396-91-3**
105528-25-4
 RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study);
 RACT (Reactant or reagent); USES (Uses)
 (fluorescence and intramol. energy transfer in particles for biochem.
 anal.)
 RN 2321-07-5 HCA
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)
 (CA INDEX NAME)

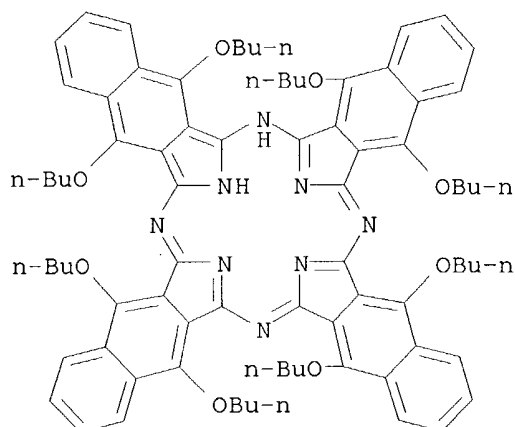


RN 92396-91-3 HCA
 CN Silicon, dichloro[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3'''-1:2''',3'''-q]porphyrinato(2-)-κN37,κN38,κN39,κN40]-, (OC-6-12)- (9CI) (CA INDEX NAME)



RN 105528-25-4 HCA

CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazine,
5,9,14,18,23,27,32,36-octabutoxy- (9CI) (CA INDEX NAME)

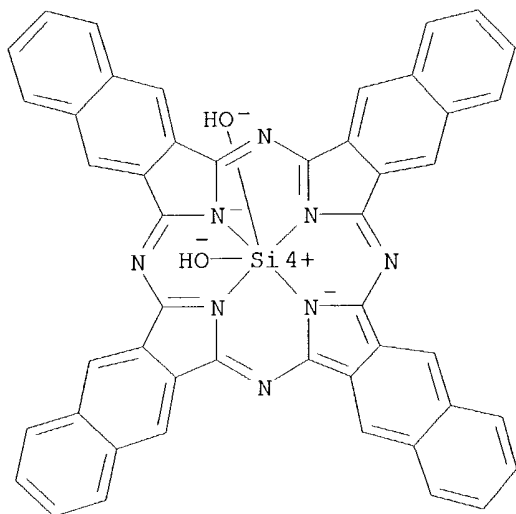


IT **92396-90-2P**

RL: ARG (Analytical reagent use); RCT (Reactant); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(fluorescence and intramol. energy transfer in particles for biochem. anal.)

RN 92396-90-2 HCA

CN Silicon, dihydroxy[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazinato(2-)-κN37,κN38,κN39,κN40]-,
(OC-6-12)- (9CI) (CA INDEX NAME)



IT 23627-89-6DP, Naphthalocyanine, derivs.

92396-89-9P 163969-08-2P 171205-26-8DP,

reaction with silicon phthalocyanine

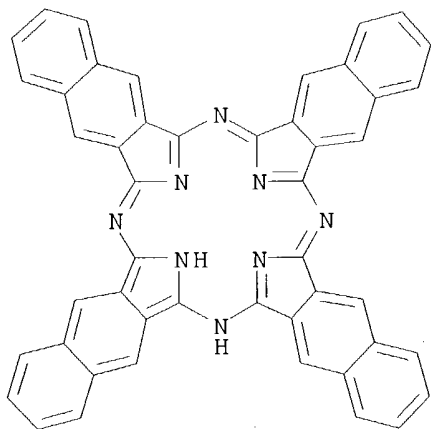
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST

(Analytical study); PREP (Preparation); USES (Uses)

(fluorescence and intramol. energy transfer in particles for biochem. anal.)

RN 23627-89-6 HCA

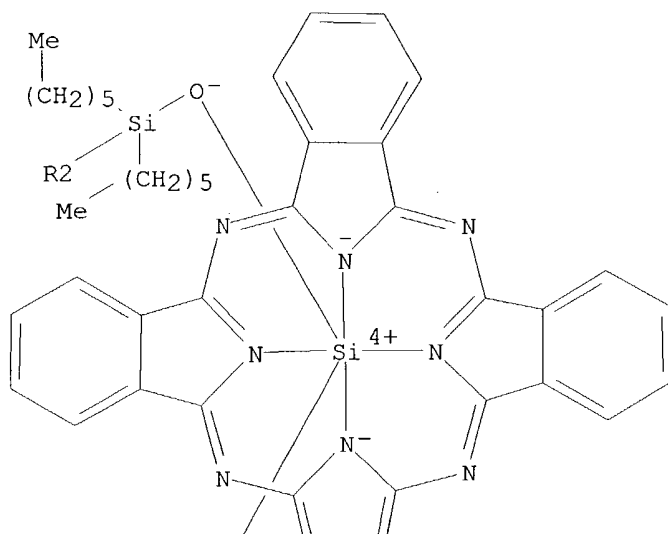
CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazine
(9CI) (CA INDEX NAME)



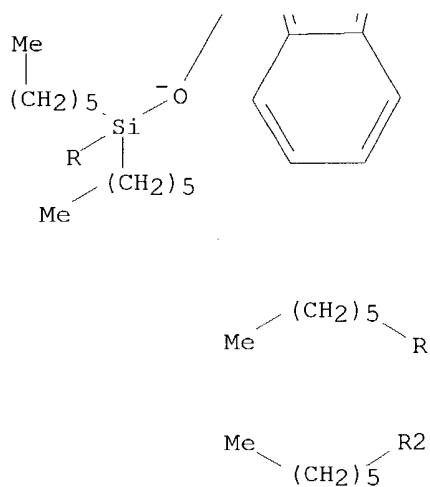
RN 92396-89-9 HCA

CN Silicon, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.k
appa.N32]bis(trihexylsilanolato)-, (OC-6-12)- (9CI) (CA INDEX NAME)

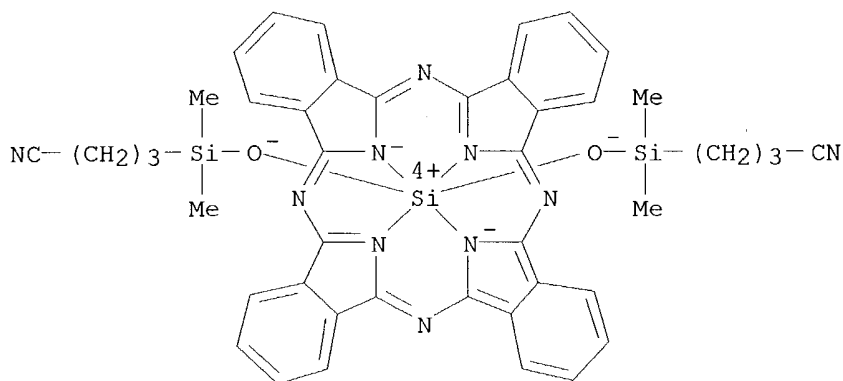
PAGE 1-A



PAGE 2-A

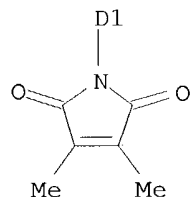
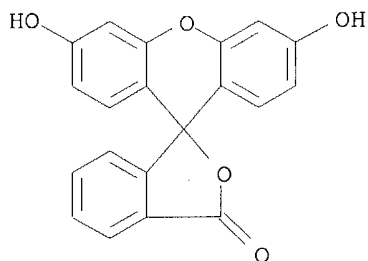


RN 163969-08-2 HCA
 CN Silicon, bis[4-[(hydroxy-κO)dimethylsilyl]butanenitrilato][29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,κN32]-,
 (OC-6-12)- (9CI) (CA INDEX NAME)



RN 171205-26-8 HCA

CN 1H-Pyrrole-2,5-dione, 1-[3',6'-dihydroxy-3-oxospiro[isobenzofuran-1(3H),9'-[9H]xanthen]-5(or 6)-yl]-3,4-dimethyl- (9CI) (CA INDEX NAME)



IC ICM G01N033-546

ICS C09B047-04

CC 9-5 (Biochemical Methods)

Section cross-reference(s): 15, 41, 74, 80

ST. fluorescence energy transfer biochem analysis immunoassay; intramol energy transfer biochem analysis; latex fluorescent particle biochem analysis; biopolymer detection energy transfer particle; dye fluorescent particle biochem analysis; phthalocyanine deriv biochem analysis; **naphthalocyanine** deriv biochem analysis

IT 514-73-8 519-62-0, Chlorophyll b **2321-07-5** 3071-70-3
 14806-50-9 16595-48-5 17094-16-5 23481-50-7 24796-94-9, Oxazine 1
 perchlorate 30753-88-9 53213-94-8 53655-17-7 56089-72-6
 70365-30-9 83484-76-8 86880-07-1 94052-41-2 97148-81-7
 97807-64-2 116453-73-7 122711-10-8 150749-57-8 163968-80-7
 163968-81-8 163968-82-9 163968-84-1 163968-85-2 163968-86-3
163968-87-4 163968-88-5 163968-89-6 163968-90-9
 163968-91-0 163968-92-1 163968-93-2 163968-95-4 163969-13-9

163969-14-0 164106-16-5 171118-91-5 **171118-92-6D**, reaction with silicon phthalocyanine 171118-93-7 171118-99-3
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (fluorescence and intramol. energy transfer in particles for biochem. anal.)

IT 56-65-5D, ATP, complex with fluorescein 68-26-8, all-trans-Retinol 75-78-5, Dichlorodimethylsilane 76-86-8, Triphenylchlorosilane 91-22-5, Quinoline, reactions 597-52-4, Triethylsilanol 1719-58-0, Chlorodimethylvinylsilane 1835-65-0, Tetrafluorophthalonitrile **2321-07-5D**, complex with ATP 3468-11-9, 1,3-Diiminoisoindoline 3634-67-1, Chlorotrihexylsilane 4655-61-2 6554-98-9, trans-4-Hydroxystilbene 7646-78-8, Tin tetrachloride, reactions 10026-04-7, Silicon tetrachloride 10038-98-9, Germanium tetrachloride 17196-12-2 18156-15-5 18419-53-9 19333-10-9 20082-71-7, Chlorodimethylpentafluorophenylsilane 26857-61-4 32703-80-3, 4-tert-Butylphthalonitrile 37623-03-3 53749-38-5 74815-81-9 **92396-91-3** 102488-47-1 **105528-25-4** 116453-89-5 116453-91-9 117753-12-5 163968-99-8 163969-18-4 163969-19-5 163969-21-9
 RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)
 (fluorescence and intramol. energy transfer in particles for biochem. anal.)

IT 19333-15-4P **92396-90-2P** 163969-16-2P 163969-17-3P 163969-24-2P
 RL: ARG (Analytical reagent use); RCT (Reactant); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (fluorescence and intramol. energy transfer in particles for biochem. anal.)

IT 101-60-0P, Porphine 574-93-6DP, Phthalocyanine, derivs. 23178-68-9DP, salts **23627-89-6DP**, Naphthalocyanine, derivs. 37069-76-4DP, salts 47676-39-1DP, salts 47809-39-2DP, salts 52319-97-8P, 5-tert-Butyl-1,3-diiminoisoindoline 52754-39-9DP, salts 62054-48-2DP, salts 68812-20-4P 71481-78-2DP, salts 83683-61-8DP, salts **92396-89-9P** 127274-90-2DP, salts 143236-82-2DP, salts 163968-94-3P 163969-00-4P 163969-01-5P 163969-02-6DP, salts 163969-03-7DP, salts 163969-04-8DP, salts 163969-05-9DP, salts 163969-06-0DP, salts 163969-07-1P **163969-08-2P** 163969-09-3P 163969-10-6P 163969-11-7P 163969-15-1P 163969-20-8P 163969-22-0P 163969-23-1P 163969-25-3P 163969-26-4P 171118-94-8P **171205-26-8DP**, reaction with silicon phthalocyanine
 RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
 (fluorescence and intramol. energy transfer in particles for biochem. anal.)

L113 ANSWER 11 OF 26 HCA COPYRIGHT 2004 ACS on STN

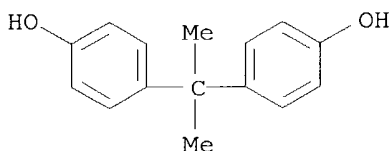
123:325780 Thermal recording materials providing durable black images. Matsumoto, Mansuke; Sasaki, Nobuaki; Sawano, Bunji; Hasegawa, Kyoharu; Yoshikawa, Kazuyoshi (Mitsui Toatsu Chemicals, Japan; Yamamoto Chemicals Inc). Jpn. Kokai Tokkyo Koho JP-07156555, A2 19950620 Heisei, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-306283 19931207.

GI For diagram(s), see printed CA Issue.

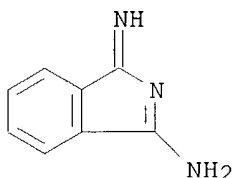
AB The title materials, comprising a recording layer containing a carbonyl compound having H atom in its α -position and an imino compound I [X = aromatic or heterocyclic compound residue able to form a conjugated system with the C:NH; Y = O, NH, (OR)₂ (R = C1-4 alkyl, the 2 R's may form a ring); R₁, R₂

= halo, alkyl, alkoxy, aryloxy, alkylthio, arylthio, dialkylamino, amino, nitro, alkylsilyl, alkylsilyloxy, trifluoromethyl; p, q = 0-6, p + q = 0-6], contain a **fluoran** derivative II [R3, R4 = C1-6 alkyl, cyclohexyl, (substituted) Ph, aralkyl, R3 and R4 may form a ring; R5 = H, C1-4 alkyl, halo; R6, R7 = H, halo, C1-4 alkyl] and a phenol derivative on a support. The materials show good heat response and provide high-color-quality black images with good storage stability. Thus, a composition containing 1,4-cyclohexanedione, 1,3-diimino-4,5,6,7-tetrachloroisindoline, II (R3 = R4 = Bu, R5 = Me, R6 = R7 = H), and **bisphenol A** was coated on a paper support to give a thermal recording paper.

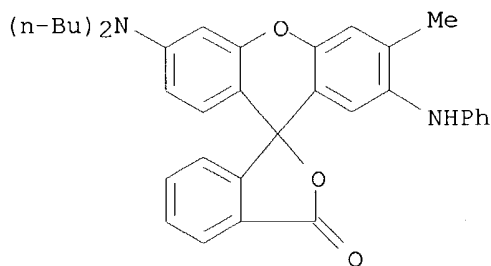
IT 80-05-7, **Bisphenol A**, uses 3468-11-9
 , 1,3-Diiminoisoindoline 89331-94-2
 RL: DEV (Device component use); USES (Uses)
 (thermal recording materials giving stable black images)
 RN 80-05-7 HCA
 CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



RN 3468-11-9 HCA
 CN 1H-Isoindol-3-amine, 1-imino- (9CI) (CA INDEX NAME)



RN 89331-94-2 HCA
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 6'-(dibutylamino)-3'-methyl-2'-(phenylamino)- (9CI) (CA INDEX NAME)



IC ICM B41M005-30
 ICS B41M005-26
 CC 74-6 (Radiation Chemistry, Photochemistry, and **Photographic** and Other **Reprographic** Processes)
 ST thermal recording material carbonyl compd; imino compd thermal recording material; **fluoran** deriv thermal recording material; phenol deriv thermal recording material
 IT 80-05-7, **Bisphenol A**, uses 637-88-7,

1,4-Cyclohexanedione **3468-11-9**, 1,3-Diiminoisoindoline
5027-32-7, 1,1,2,2-Tetraacetyethane 40360-28-9, 1,3-Diimino-4,5,6,7-
tetrachloroisoindoline **89331-94-2**

RL: DEV (Device component use); USES (Uses)

(thermal recording materials giving stable black images)

L113 ANSWER 12 OF 26 HCA COPYRIGHT 2004 ACS on STN

115:82180 Color electrophotographic toner containing negatively chargeable polyester binder. Kanbayashi, Makoto; Okado, Kenji; Nagatsuka, Takayuki (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP_02264265; A2 19901029 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-84115 19890404.

AB In the title toner made by pulverization process including mixing an elec. insulative resin comprising a neg. chargeable polyester having a volume average particle diameter 30-1000 μm and a pos. chargeable pigment or dye having an elec. charge 3-45 $\mu\text{C/g}$ and a primary particle diameter 0.05-5 μm and heating and kneading the resultant mixture with a continuous extruding machine such as an extruder, the granularity distribution of the toner shows that the volume average particle diameter is 6-10 μm , there is 15-40 number%

of the toner particles having a particle diameter <5 μm , the toner particles having a particle diameter 12.7-16 μm occupy 0.1-5 volume%, and the coarse particles of the toner having a diameter >16 μm occupy <10 volume% and the apparent viscosities of the toner at 100° and 90° are 104-5 + 105 and 5 + 104-106 P, resp.

IT **509-34-2**, C.I. Solvent Red 49 **574-93-6**,

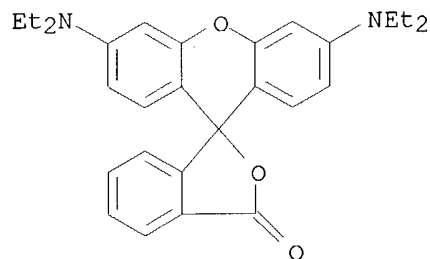
Phthalocyanine

RL: USES (Uses)

(color electrophotog. toners containing)

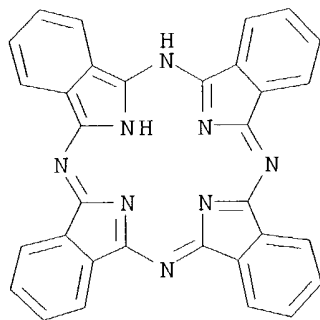
RN 509-34-2 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-bis(diethylamino)-(9CI) (CA INDEX NAME)

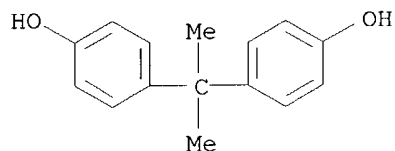


RN 574-93-6 HCA

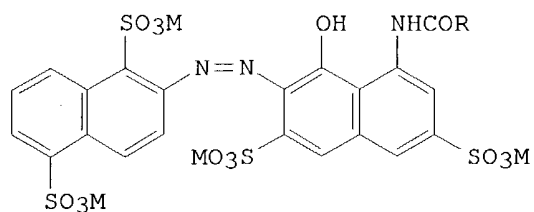
CN 29H,31H-Phthalocyanine (9CI) (CA INDEX NAME)



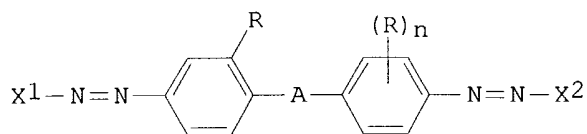
IT **80-05-7D**, compds. with propylene oxide, polymers with fumaric acid
 RL: USES (Uses)
 (neg. chargeable binders, color electrophotog. toners containing)
 RN 80-05-7 HCA
 CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



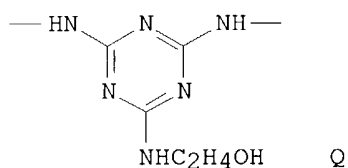
IC ICM G03G009-087
 ICS G03G009-09
 CC 74-3 (Radiation Chemistry, Photochemistry, and **Photographic** and
 Other **Reprographic** Processes)
 IT Polyesters, uses and miscellaneous
 RL: USES (Uses)
 (bisphenol A-based, propylene oxide-modified,
 binders, color electrophotog. toners containing)
 IT 81-39-0, C.I. Solvent Red 52 **509-34-2**, C.I. Solvent Red 49
574-93-6, Phthalocyanine 4531-49-1, C.I. Pigment
 Yellow 17
 RL: USES (Uses)
 (color electrophotog. toners containing)
 IT **80-05-7D**, compds. with propylene oxide, polymers with fumaric acid
 110-17-8D, 2-Butenedioic acid (E)-, polymers with propylene oxide-modified
bisphenol A
 RL: USES (Uses)
 (neg. chargeable binders, color electrophotog. toners containing)
 L113 ANSWER 13 OF 26 HCA COPYRIGHT 2004 ACS on STN
 111:136203 Forming ink-jet color images. Takimoto, Hiroshi; Yoneyama, Tomio;
 Sano, Hideo; Haruta, Masahiro; Suga, Yuko; Shirota, Katsuhiko (Mitsubishi
 Kasei Corp., Japan; Canon K. K.). Jpn. Kokai Tokkyo Koho JP 63306075-A2
 19881214 Showa, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
 1987-141389 19870608.
 GI



I



II



Q

AB High-quality ink-jet color images are formed by ink-jet printer on various grades of paper without printer nozzle clogging and with good ink storability, by using magenta inks containing dyes I (R = alkyl, ph; M = alkali metal, NH₄, organic amine), yellow inks containing dyes II (A = NHCONH,

Q;
X₁, X₂ = Ph, naphthyl, optionally substituted by SO₃M or CO₂M; R = Me, MeO; n = 0.1; M as above), and cyan inks containing dyes WPC(SO₃M)_m(SO₂NH₂)_n (W = Cu, Ni; Pc = phthalocyanine; M as above; m = 2-4; n=0-3). A typical magenta ink comprised I (M = Na; k = Ph) 7, water 70, diethylene glycol 25, and glycerin 3 parts.

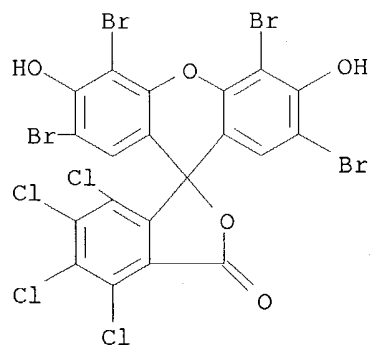
IT **18472-87-2**, C.I. Acid Red 92 **67968-25-6**

RL: USES (Uses)

(dye, for inks for ink-jet printing)

RN 18472-87-2 HCA

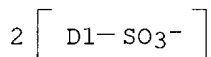
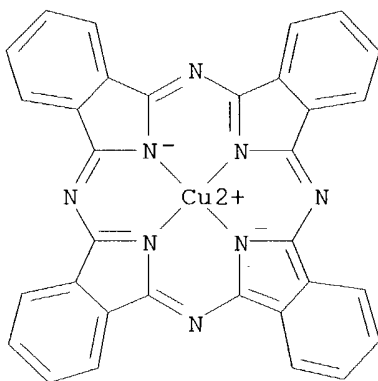
CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',4',5',7'-tetrabromo-4,5,6,7-tetrachloro-3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)



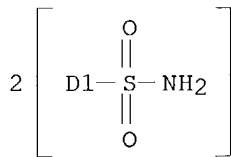
●2 Na

RN 67968-25-6 HCA
 CN Cuprate(2-), [C,C-bis(aminosulfonyl)-29H,31H-phthalocyanine-C,C-disulfonato(4-)-κN29,κN30,κN31,κN32]-, disodium (9CI) (CA INDEX NAME)

PAGE 1-A



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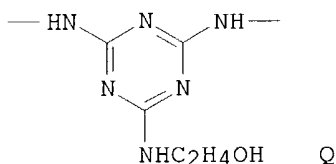
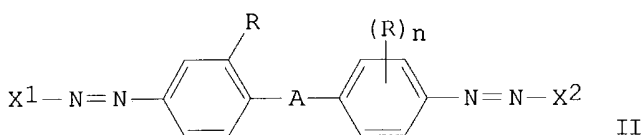
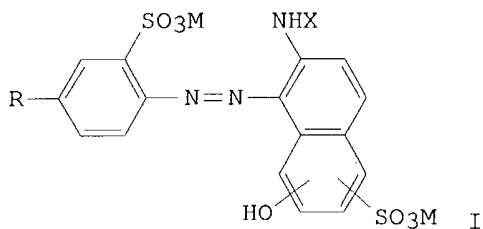


IC ICM B41M005-00
 ICS C09B067-22; C09D011-00; C09D011-02
 CC 42-12 (Coatings, Inks, and Related Products)
 Section cross-reference(s): **41, 74**
 IT 1064-48-8, C.I. Acid Black 1 1934-21-0, C.I. Acid Yellow 23 2650-18-2,
 C.I. Acid Blue 9 12221-89-5, C.I. Direct Black 62 **18472-87-2**,
 C.I. Acid Red 92 **67968-25-6** 70968-24-0 107246-80-0
 109205-04-1 110292-36-9 112224-50-7 112224-51-8 122856-51-3
 122856-52-4
 RL: USES (Uses)
 (dye, for inks for ink-jet printing)

L113 ANSWER 14 OF 26 HCA COPYRIGHT 2004 ACS on STN
 111:136202 Forming ink-jet color images. Takimoto, Hiroshi; Yoneyama, Tomio;

Sano, Hideo; Haruta, Masahiro; Suga, Yuko; Shiota, Katsuhiko (Mitsubishi Kasei Corp., Japan; Canon K. K.). Jpn. Kokai Tokkyo Koho JP-633060763A2 19881214 Showa, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-141390 19870608.

GI



AB High-quality ink-jet color images are formed by ink-jet printer on various grades of paper without printer nozzle clogging and with good ink storability, by using magenta inks containing dyes I (R = nitro, acylamino; X = H, alkyl; M = alkali metal, NH₄, organic amine), yellow inks containing dyes

II (A = NHCONH, Q; X₁, X₂ = Ph or naphthyl optionally substituted by SO₃M or CO₂M; R = Me, MeO; 1 = 0.1; M as above), and cyan inks containing dyes WPC(SO₃M)_m(SO₂NH₂)_n (W = Cu, Ni, PC = phthalocyanine; M as above; n = 2-4; n = 0-3). A typical magenta ink composed I (R = NO₂; X = H; M = K) 2, water 70, diethylene glycol 25, and glycerin 3 parts.

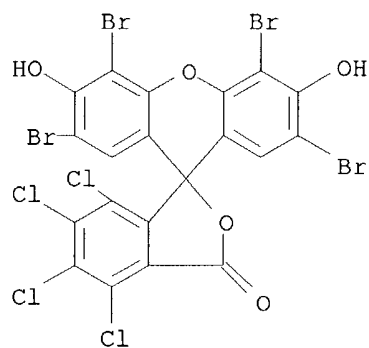
IT **18472-87-2**, C.I. Acid Red 92 **67968-25-6**

RL: USES (Uses)

(dye, for inks for ink-jet printing)

RN 18472-87-2 HCA

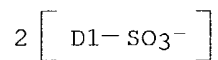
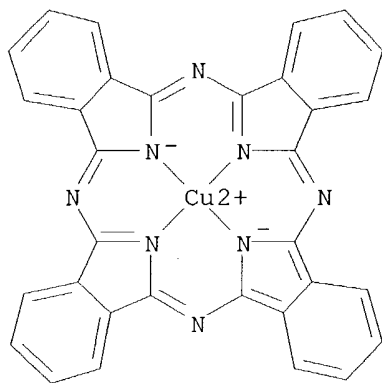
CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',4',5',7'-tetrabromo-4,5,6,7-tetrachloro-3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)



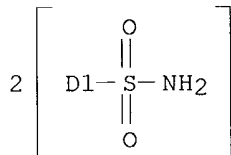
● 2 Na

RN 67968-25-6 HCA
 CN Cuprate(2-), [C,C-bis(aminosulfonyl)-29H,31H-phthalocyanine-C,C-disulfonato(4-)-κN29,κN30,κN31,κN32]-, disodium
 (9CI) (CA INDEX NAME)

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● 2 Na⁺

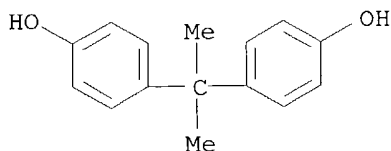
IC ICM B41M005-00
ICS C09B067-22; C09D011-00; C09D011-02
CC 42-12 (Coatings, Inks, and Related Products)
Section cross-reference(s): **41, 74**
IT 1064-48-8, C.I. Acid Black 1 1934-21-0, C.I. Acid Yellow 23 2650-18-2,
C.I. Acid Blue 9 12221-89-5, C.I. Direct Black 62 **18472-87-2**,
C.I. Acid Red 92 **67968-25-6** 70968-24-0 107246-80-0
110292-36-9 112224-50-7 112224-51-8 122856-53-5 122856-54-6
RL: USES (Uses)
(dye, for inks for ink-jet printing)

L113 ANSWER 15 OF 26 HCA COPYRIGHT 2004 ACS on STN
110:182893 Yellow, magenta, cyan, and black toners for color
electrophotographic developers. Kobayashi, Hiroyuki; Uchida, Mitsuru;
Okado, Kenji (Canon K. K., Japan). Eur. Pat. Appl. EP-275636 A2 19880727,
38 pp. DESIGNATED STATES: R: DE, FR, GB, IT, NL. (English). CODEN:
EPXXDW. APPLICATION: EP 1987-310178 19871118. PRIORITY: JP 1987-9467
19870119.

AB Yellow, magenta, cyan, and black toners, each comprising appropriate
pigments, a binder resin selected from polyesters and acrylate-styrene
copolymers, and a fluidity-improving agent selected from silica, ZnO,
metal stearates, polytetrafluoroethylene, and vinylidene fluoride resins,
are prepared and combined with ferrite carriers coated with a mixture of a
styrene-type resin and a F-containing resin to give color electrophotog.
developers. Each of the color toners is strictly regulated in relation
not only to the carrier but also to the other color toners. More
specifically, each color toner is strictly controlled with respect to
particle size distribution, freeness from agglomeration, melting
characteristics, chromaticity, triboelec. chargeability, and optical
properties. The color toners thus prepared exhibit excellent performances
at every stage of color electrophotog. process including development,
transfer, and fixing.

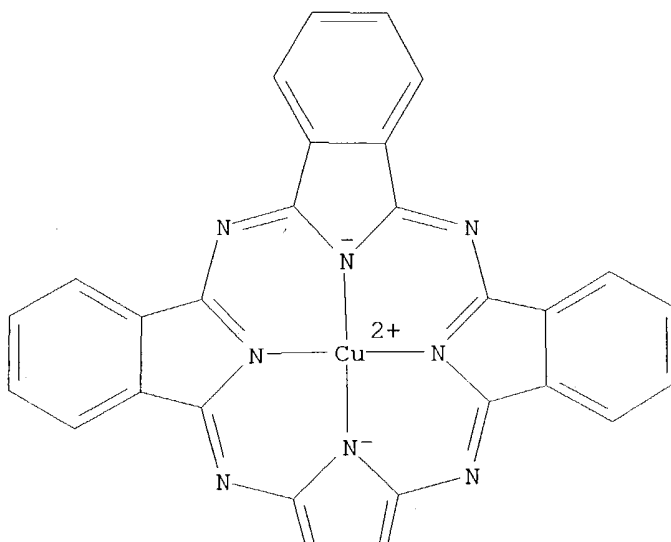
IT **80-05-7D**, propoxides, condensation products with fumaric acid
RL: USES (Uses)
(binders, for toners for color electrophotog. developers)

RN 80-05-7 HCA
CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)

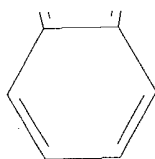


IT 147-14-8 574-93-6, 29H,31H-Phthalocyanine
116107-50-7
RL: USES (Uses)
(cyan toners containing, for color electrophotog. developers)
RN 147-14-8 HCA
CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka
ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

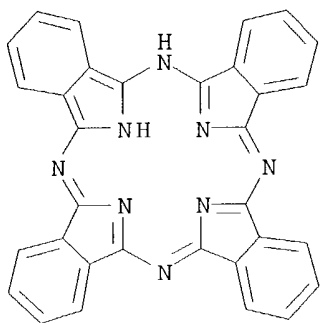
PAGE 1-A



PAGE 2-A

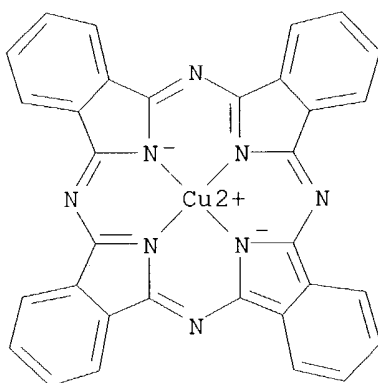


RN 574-93-6 HCA
CN 29H,31H-Phthalocyanine (9CI) (CA INDEX NAME)

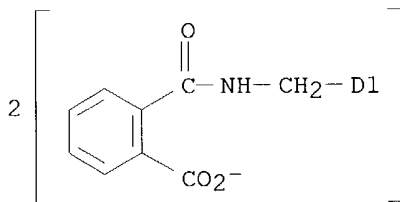


RN 116107-50-7 HCA
 CN Cuprate(2-), [[2,2'-[29H,31H-phthalocyanine-C,C-diylbis(methyleneiminocarbonyl)]bis[benzoato]](4-)-N29,N30,N31,N32]-, barium (1:1) (9CI) (CA INDEX NAME)

PAGE 1-A

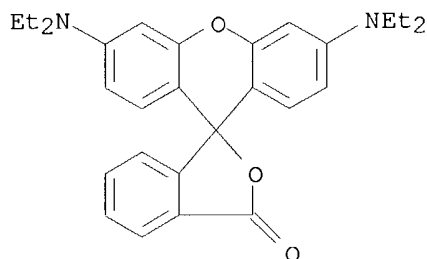


PAGE 2-A

● Ba²⁺

IT 509-34-2
 RL: USES (Uses)
 (magenta toners containing, for color electrophotog. developers)
 RN 509-34-2 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-bis(diethylamino)-
(9CI) (CA INDEX NAME)



IC ICM G03G009-08

ICS G03G013-01

CC 74-3 (Radiation Chemistry, Photochemistry, and **Photographic** and
Other **Reprographic** Processes)

IT **80-05-7D**, propoxides, condensation products with fumaric acid
110-17-8D, Fumaric acid, condensation products with propoxides of
bisphenol

RL: USES (Uses)

(binders, for toners for color electrophotog. developers)

IT **147-14-8 574-93-6**, 29H,31H-**Phthalocyanine**

116107-50-7

RL: USES (Uses)

(cyan toners containing, for color electrophotog. developers)

IT 81-39-0 **509-34-2** 2425-85-6 6041-94-7 6320-14-5 6410-13-5
6410-41-9 6471-51-8 119466-10-3, C.I. Disperse Violet 32

RL: USES (Uses)

(magenta toners containing, for color electrophotog. developers)

L113 ANSWER 16 OF 26 HCA COPYRIGHT 2004 ACS on STN

109:83637 Two-color thermal recording materials containing a coloring pigment.

Inaba, Norihiko; Yuyama, Yukihiro; Okuda, Hiroaki; Kato, Noritomo (Ricoh
Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62299383 A2 19871226 Showa,
8 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-143945 19860619.

AB Two-color thermal recording materials are prepared by laminating
successively a high temperature-coloration layer containing a coloring
pigment, a

decoloring layer, and a low temperature-coloration layer on a support. The
materials provide high quality 2 colors images with good color separation and
without fog. Thus, a paper support was 1st coated with a composition

containing

3-diethylamino-7-**chlorofluoran**, **Bisphenol A**,

CaCO₃, and **phthalocyanine blue** (I), then coated with a composition

containing 4,4-dithiodimorpholine, and finally coated with a composition

containing

3-(N-ethyl-N-amylamino)-6-methyl-7-**anilino**fluoran,

3,3'-dichlorophenylthiourea, and CaCO₃ to give a thermal recording paper.

The recording paper was recorded by using a thermal head at a thermal
energy of 1.0 and 2.0 mJ/dot to give high quality black images and red
images, resp., compared to a control containing no I.

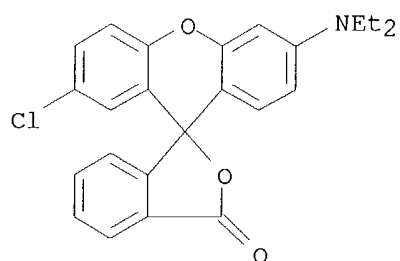
IT **26567-23-7 70516-37-9**

RL: USES (Uses)

(dye, two-color thermal printing material using)

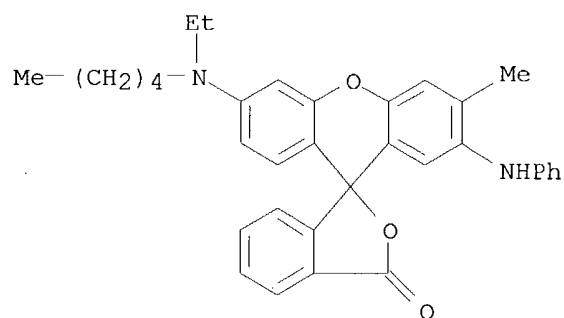
RN 26567-23-7 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2'-chloro-6'-
(diethylamino)- (9CI) (CA INDEX NAME)



RN 70516-37-9 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 6'-(ethylpentylamino)-3'-methyl-2'-(phenylamino)- (9CI) (CA INDEX NAME)



IT **147-14-8, Phthalocyanine** blue

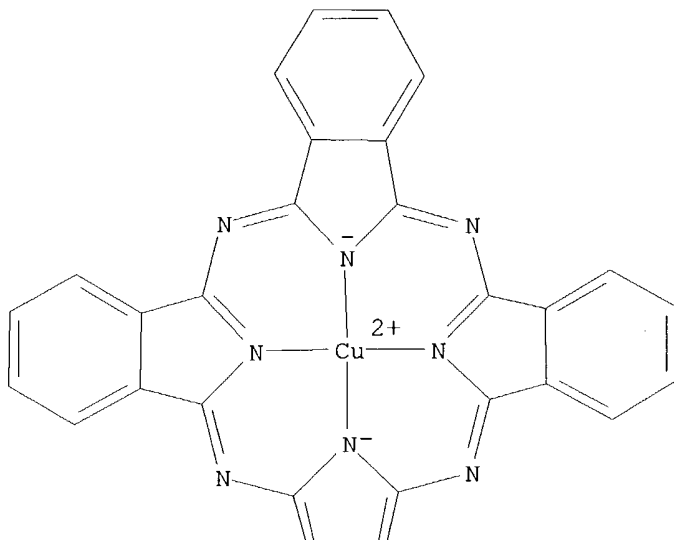
RL: USES (Uses)

(pigment, two-color thermal printing material high temperature-coloration layer containing)

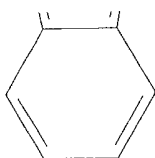
RN 147-14-8 HCA

CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

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IC ICM B41M005-18
 ICS B41M005-18
 CC 74-12 (Radiation Chemistry, Photochemistry, and **Photographic** and
 Other **Reprographic** Processes)
 IT **26567-23-7 70516-37-9**
 RL: USES (Uses)
 (dye, two-color thermal printing material using)
 IT **147-14-8, Phthalocyanine blue**
 RL: USES (Uses)
 (pigment, two-color thermal printing material high temperature-coloration
 layer containing)

L113 ANSWER 17 OF 26 HCA COPYRIGHT 2004 ACS on STN

107:97632 Scale-preventing coatings for vinyl chloride polymer manufacture.
 Koyanagi, Shunichi; Kitamura, Hajime; Shimizu, Toshihide; Kaneko, Ichiro
 (Shin-Etsu Chemical Co., Ltd., Japan). Eur. Pat. Appl. EP 172427 A2
 19860226, 153 pp. DESIGNATED STATES: R: BE, DE, FR, GB, IT, NL, SE.
 (English). CODEN: EPXXDW. APPLICATION: EP 1985-109161 19850722.
 PRIORITY: JP 1984-152522 19840723; JP 1984-155967 19840726.

AB PVC or vinyl chloride copolymer is prepared without polymer deposition and

scaling on the polymerization reactor walls by applying an antiscaling coating, comprising ≥ 1 dye, pigment, aromatic or heterocyclic compound having ≥ 5 conjugated π bonds, to the walls of the polymerization reactor and controlling the Cl^- concentration in the reaction mixture to ≤ 100 ppm.

Thus, a coating containing 0.5% Basic Black 8 and H_2O was coated onto the polished inner wall surface of a 1000-L polymerization reactor, dried at 80° for 10 min, and thoroughly washed with H_2O . The coated reactor was charged with 200 kg $\text{H}_2\text{C}:\text{CHCl}$, 400 kg H_2O , partially saponified Poval 44, hydroxypropyl methyl cellulose 36, and tert-butylperoxyneodecanoate 60 g. Polymerization was carried out at 52° for 7 h, and the Cl^- concentration was maintained at 13-18 ppm by changing the contents of the MeCl and HCl components contained in the starting monomer. At the end of polymerization,

the

polymer was taken out and the reactor washed internally with H_2O at flow rate $0.1 \text{ m}^3/\text{m}^2\text{-h}$ for 10 min. Inspection of the wall surfaces after washing demonstrated no adhering of PVC scales, vs. thick adhering of scales over the entire polymerization reactor inner wall surface ($1000 \text{ g}/\text{m}^2$)

for

a control polymerization conducted without an antiscaling coating, and with Cl^- concentration during polymerization 280-350 ppm.

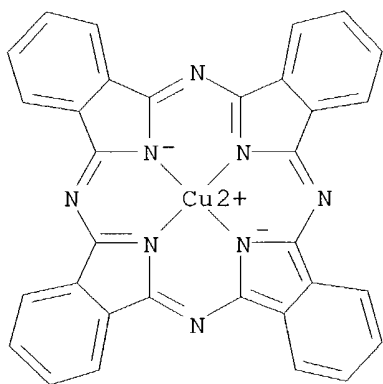
IT 1330-37-6, Pigment Green 37 17372-87-1, Acid Red 87

RL: USES (Uses)

(polymerization reactor wall antiscaling coatings containing, for PVC manufacture)

RN 1330-37-6 HCA

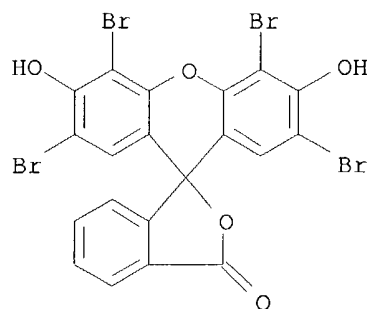
CN Copper, [C,C,C,C,C,C,C,C-octachloro-29H,31H-phthalocyaninato(2-)- $\kappa\text{N}29,\kappa\text{N}30,\kappa\text{N}31,\kappa\text{N}32$]- (9CI) (CA INDEX NAME)



8 (D1-C1)

RN 17372-87-1 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',4',5',7'-tetrabromo-3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)



●2 Na

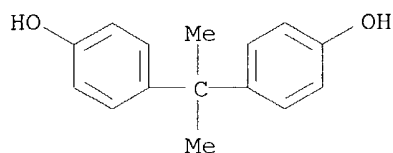
IT 80-05-7, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(polymerization reactor wall antiscaling coatings containing, for PVC manufacture)

RN 80-05-7 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



IT 147-14-8, Pigment Blue 15 509-34-2, Solvent Red 49

574-93-6, Phthalocyanine 1330-38-7, Direct

Blue 86 14302-13-7 16423-68-0, Food Red 14

RL: DEV (Device component use); USES (Uses)

(scale-preventing coatings containing, for polymerization reactor walls in

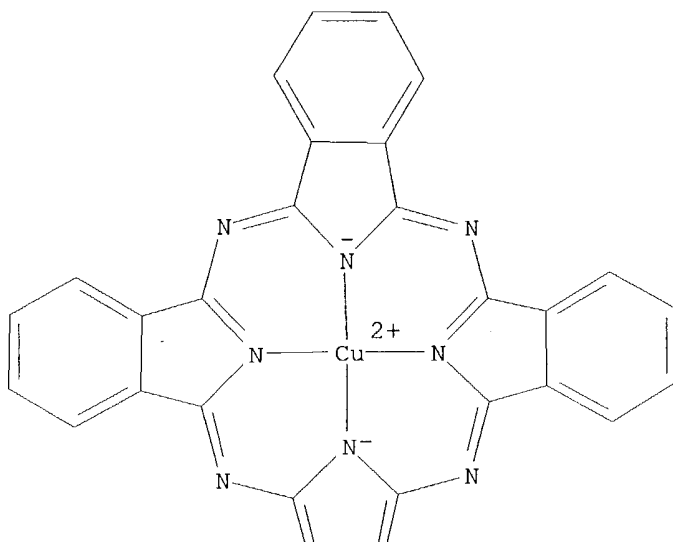
PVC

manufacture)

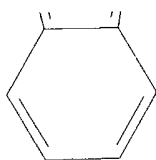
RN 147-14-8 HCA

CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka
ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

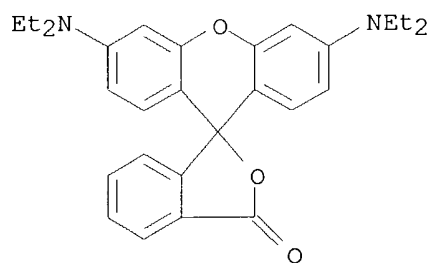
PAGE 1-A



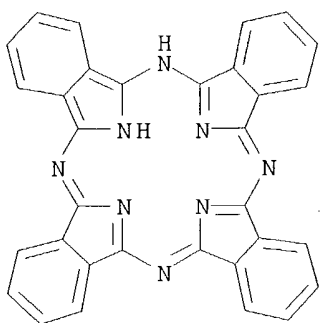
PAGE 2-A



RN 509-34-2 HCA
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-bis(diethylamino)-
 (9CI) (CA INDEX NAME)

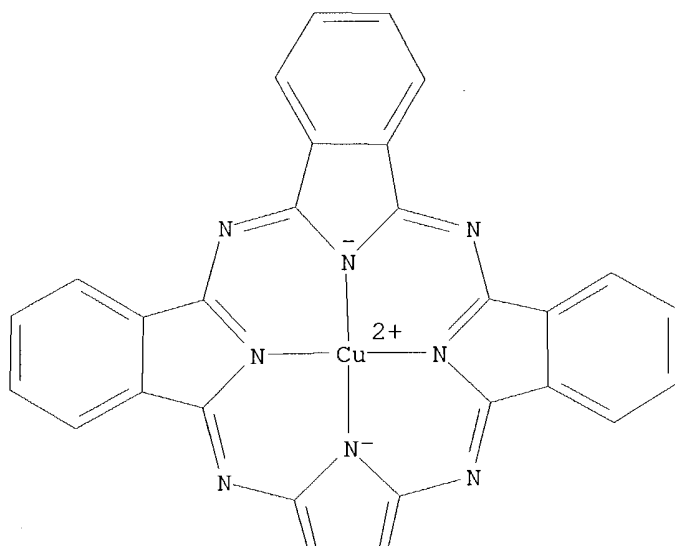


RN 574-93-6 HCA
 CN 29H,31H-Phthalocyanine (9CI) (CA INDEX NAME)

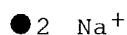
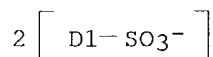
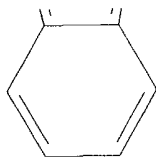


RN 1330-38-7 HCA
 CN Cuprate(2-), [29H,31H-phthalocyanine-C,C-disulfonato(4-)-
 κ N29, κ N30, κ N31, κ N32]-, disodium (9CI) (CA INDEX
 NAME)

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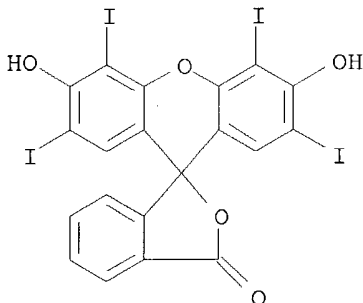
RN 14302-13-7 HCA

CN C.I. Pigment Green 36 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 16423-68-0 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy-2',4',5',7'-tetraiodo-, disodium salt (9CI) (CA INDEX NAME)



IC ICM C08F014-06

ICS C08F002-00

CC 37-3 (Plastics Manufacture and Processing)

Section cross-reference(s): 35, 41, 42

IT 66-71-7, 1,10-Phenanthroline 91-22-5, Quinoline, uses and miscellaneous
 92-83-1, Xanthene 101-54-2, 4-Aminodiphenylamine 198-55-0, Perylene
 225-61-6 260-94-6 304-81-4 447-53-0, 1,2-Dihydronaphthalene
 477-73-6 482-89-3D, reduced 534-85-0, 2-Aminodiphenylamine 557-34-6,
 Zinc(II) acetate 578-95-0, Acridone 632-99-5, Rosaniline 655-86-7
 796-30-5, 1,4-Diphenylnaphthalene 883-93-2, 2-Phenylbenzothiazole
 947-63-7 1314-62-1, Vanadium pentoxide, uses and miscellaneous
 1325-85-5, Solvent Blue 2 1327-70-4, Solubilized Sulfur Blue 15
 1327-84-0, Sulfur Red 3 1330-37-6, Pigment Green 37 1343-98-2
 2010-06-2, 2-Amino-4-phenylthiazole 2050-14-8 2050-37-5 2379-75-1,
 Vat Violet 3 2465-27-2, Basic Yellow 2 2611-80-5, Acid Red 82
 2876-17-7 2876-23-5 4395-53-3, Vat Black 25 4677-04-7 4787-93-3,

Acid Red 8 5462-29-3, Vat Violet 2 6371-38-6, Vat Blue 41 6378-88-7,
 Acid Blue 59 6826-24-0 7446-70-0, Aluminum trichloride, uses and
 miscellaneous 7646-79-9, uses and miscellaneous 8005-02-5, Solvent
 Black 7 10127-03-4, Pigment Blue 25 10134-35-7, Solubilized Vat Black
 1 10193-36-9, Orthosilicic acid 10343-58-5, Acid Yellow 99
 10354-00-4 12217-43-5, Basic Blue 47 12217-44-6, Basic Blue 64
 12219-87-3, Acid Green 40 12223-34-6, Disperse Red 12 12224-98-5,
 Pigment Red 81 12226-72-1, Solvent Black 23 12768-78-4, Acid Green 16
 12768-80-8, Basic Blue 40 13472-30-5 14233-37-5, Solvent Blue 36
 17354-14-2, Solvent Blue 35 **17372-87-1**, Acid Red 87
 17534-14-4, 9-Mercaptoanthracene 19286-75-0, Disperse Violet 30
 26093-31-2 27938-76-7 29909-72-6 33270-70-1, Solvent Red 8
 35079-24-4, 2-Iodo-1,4-naphthoquinone 36043-49-9 40019-43-0
 53348-04-2, 9,10-Diaminophenanthrene 55840-82-9, Basic Blue 3
 59459-48-2, Solvent Orange 40 61724-94-5, Direct Red 9 61725-34-6,
 Mordant Green 29 63464-85-7 78769-83-2 103863-34-9 109850-57-9
 109871-16-1 109871-25-2, 4-Nitroso-1-naphthylamine 109944-90-3
 RL: USES (Uses)

(polymerization reactor wall antiscaling coatings containing, for PVC
 manufacture)

IT **80-05-7**, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(polymerization reactor wall antiscaling coatings containing, for PVC
 manufacture)

IT 61-73-4, Basic Blue 9 65-61-2, Basic Orange 14 66-76-2, Dicoumarol
 71-48-7, Cobalt(II) acetate 72-48-0, Alizarine 81-53-8 83-08-9,
 Quinophthalone 90-11-9, 1-Bromonaphthalene 90-14-2 90-15-3,
 α -Naphthol 92-62-6, 3,6-Diaminoacridine 92-84-2, Phenothiazine
 93-04-9, 2-Methoxynaphthalene 101-60-0 117-99-7 130-20-1, Vat Blue 6
 131-91-9, α -Nitroso- β -naphthol **147-14-8**, Pigment Blue
 15 204-02-4, Perimidine 225-74-1 229-87-8, 3,4-Benzoquinoline
 275-51-4 477-73-6 487-19-4 493-77-6, 2,4,6-Triphenyl-S-triazine
509-34-2, Solvent Red 49 519-61-9 519-62-0, Chlorophyll B
 522-97-4, Tetrahydroberberine 532-82-1, Basic Orange 2 573-12-6,
 Phenanthrene-1,2-quinone **574-93-6**, **Phthalocyanine**
 577-85-5, Flavonol 578-06-3, 1-Aminoacridine 578-07-4, 4-Aminoacridine
 581-28-2, 2-Aminoacridine 613-20-7, 2,6-Naphthoquinone 635-90-5,
 1-Phenylpyrrole 642-31-9 643-62-9 670-95-1, 4-Phenylimidazole
 809-63-2 825-55-8, 2-Phenylthiophene 846-70-8, Acid Yellow 1
 860-22-0, Acid Blue 74 911-90-0 1096-84-0 1139-83-9 1167-72-2
 1309-33-7, Ferric hydroxide 1313-13-9, Manganese dioxide, uses and
 miscellaneous 1324-11-4, Vat Orange 1 1324-21-6, Mordant Black 13
 1324-58-9, Direct Blue 108 1326-03-0, Pigment Violet 1 1326-38-1,
 Solubilized Sulfur Brown 1 1327-10-2, Sulfur Brown 7 1327-56-6, Sulfur
 Blue 9 1328-18-3, Vat Blue 19 **1330-38-7**, Direct Blue 86
 1454-80-4, 2,2'-Diaminodiphenyl 1504-16-1, 3-Phenylindole 1532-84-9,
 1-Aminoisoquinoline 1709-63-3 1806-29-7 1821-27-8,
 4,4'-Dinitrodiphenylamine 1826-12-6, 4-Phenylthiazole 1836-22-2,
 Mordant Red 9 1934-16-3, Basic Blue 24 2010-06-2, 2-Amino-4-
 phenylthiazole 2052-25-7, Mordant Black 9 2148-14-3 2278-50-4, Vat
 Black 8 2379-78-4, Vat Orange 15 2390-60-5, Basic Blue 7 2429-84-7,
 Direct Red 1 2458-26-6, 5-Phenylpyrazole 2633-01-4, 3,3'-Azopyridine
 2876-22-4 3426-43-5, Fluorescent brightening agent 90 3648-36-0, Basic
 Red 13 4176-53-8, 1-Aminophenanthrene 4197-25-5, Solvent Black 3
 4291-14-9, 2-Phenyl-1,3,4-thiadiazole 4443-99-6, Basic Black 2
 4444-35-3 4458-37-1, 1,4-Diaminoanthracene 4464-75-9 4478-76-6, Acid
 Red 80 4599-42-2 4735-10-8 4857-81-2, Acid Green 9 5422-17-3,
 Direct Green 8 5487-14-9 5962-00-5 6245-87-0, Indoaniline
 6272-40-8 6359-38-2, Benzoflavin 6359-82-6, Acid Yellow 11

6360-07-2, Acid Red 37 6371-11-5, Pigment Red 87 6378-88-7, Acid Blue 59 6406-61-7, Mordant Green 15 6428-56-4, Direct Black 74 6527-70-4 6655-84-1, Pigment Red 17 6655-95-4, Direct Blue 158 6813-44-1 6856-08-2, Acid Blue 102 7447-39-4, uses and miscellaneous 7576-65-0, Disperse Yellow 54 7631-86-9, reactions 7646-85-7, uses and miscellaneous 7699-41-4, Metasilicic acid 7718-54-9, uses and miscellaneous 7758-94-3, Ferrous chloride 7786-30-3, Magnesium dichloride, reactions 8003-22-3, Solvent Yellow 33 8004-59-9, Acid Black 7 8004-92-0, Acid Yellow 3 8005-03-6, Acid Black 2 8005-30-9, Vat Brown 22 8005-77-4, Basic Brown 1 9003-05-8, Polyacrylamide 9003-09-2, Polyvinylmethyl ether 9003-17-2, Polybutadiene 9003-27-4, Polyisobutene 9003-53-6 9004-35-7, Cellulose acetate 9004-57-3, Ethyl cellulose 9004-62-0, Hydroxyethyl cellulose 10143-03-0, Mordant Violet 15 10241-21-1, Acid Green 12 10362-71-7, Indophenine 11098-99-0, Molybdenum oxide 11099-03-9, Solvent Black 5 11104-89-5, Silicomolybdic acid 12027-38-2 12213-69-3, Pigment Green 2 12217-41-3 12217-98-0, Reactive Blue 8 12221-53-3, Basic Red 27 12221-56-6 12222-76-3 12223-73-3, Disperse Violet 10 12224-27-0 12225-33-1, Reactive Black 18 12226-94-7, Solvent Red 121 12227-42-8, Vat Green 44 12234-56-9, Acid Black 159 12235-29-9 12235-80-2, Direct Orange 57 12235-90-4, Disperse Black 29 12237-69-3, Solvent Blue 73 12239-21-3 12627-14-4, Lithium silicate 12650-31-6, Hydron Blue 12768-82-0, Basic Orange 15 **14302-13-7 16423-68-0**, Food Red 14 18450-11-8, 2,4-Diaminophenazine 18624-44-7, Ferrous hydroxide 20662-89-9, 4-Phenyloxazole 21645-51-2, Aluminum hydroxide [Al(OH)₃], reactions 22020-72-0 23579-46-6 24108-89-2, Pigment Red 123 24743-25-7 24979-93-9, Polyallene 24979-97-3, Polytetrahydrofuran 25038-69-1 25067-59-8, Poly(N-vinyl carbazole) 25232-41-1, Poly(4-vinylpyridine) 25498-06-0 25568-84-7, Polycyclopentadiene 25702-20-9 25951-24-0, Polysarcosine 26140-60-3, Terphenyl 26386-86-7 26835-25-6 27393-85-7 27986-50-1, Poly(1,3-cyclohexadiene) 28236-68-2, Phenylfuroxane 29588-56-5 29659-51-6, Poly(9-vinylanthracene) 30606-93-0 32146-09-1 32440-33-8 33090-29-8, 4,4'-Dibenzoyldiphenyl 33363-87-0, Direct Brown 25 34777-33-8 34938-47-1, 2-Phenylazoimidazole 38096-30-9, Diaminonaphthalene 38183-03-8 39311-68-7, Stannic acid 40475-44-3, Diaminobenzophenone 40498-13-3, Leucoquinizarin 41903-66-6 50525-58-1, Acid Violet 78 50814-26-1, Acid Blue 151 51039-49-7 53348-04-2, 9,10-Diaminophenanthrene 53802-03-2, Solvent Red 109 55513-24-1 55691-84-4, 2-Iodophenanthrene 55840-82-9, Basic Blue 3 56729-14-7, Butyl cellulose 58142-99-7, 5-Iodoisoquinoline 61723-90-8, Acid Blue 60 61724-13-8, Acid Brown 161 61725-29-9, Mordant Blue 58 61725-74-4, Solvent Brown 37 61813-72-7, Azoic Black 1 62124-96-3 62882-10-4 64352-53-0 70210-47-8, Reactive Green 8 70234-95-6, Poly(N-vinyl-1,2,4-triazole) 72154-46-2 73108-75-5 74343-76-3 80802-87-5 84954-93-8 85340-41-6, Solvent Yellow 61 95929-61-6 98590-06-8 102821-16-9, 2,4-Dinitro-9-phenylacridine 103859-52-5 104993-77-3, Tetraaminonaphthalene 109835-79-2 109850-54-6 109850-55-7 109850-56-8 109871-17-2 109871-18-3 109871-19-4 109871-20-7, 2-Anilinoanthracene 109871-21-8 109871-22-9

RL: DEV (Device component use); USES (Uses)

(scale-preventing coatings containing, for polymerization reactor walls in PVC manufacture)

L113 ANSWER 18 OF 26 HCA COPYRIGHT 2004 ACS on STN
 107:87255 Thermographic recording sheets. Igarashi, Akira (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 61130085, A2 19860617 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-252354 19841129.

AB Colored thermog. recording sheets are obtained with dyes or pigments incorporated in the color development layer so that the absorbance maximum of the color development surface in the visible wavelength range is 0.2-1.0. The above color development layer is based on an electron donor colorless dye and an electron acceptor compound which reacts on heating to produce a colored material. The recording sheets show good printing d., shelf-life, contrast, and background chroma.

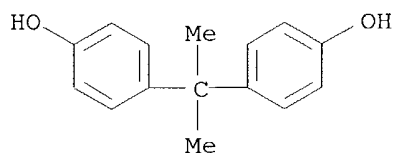
IT **80-05-7**, uses and miscellaneous

RL: USES (Uses)

(color developer, thermog. recording sheet using)

RN 80-05-7 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



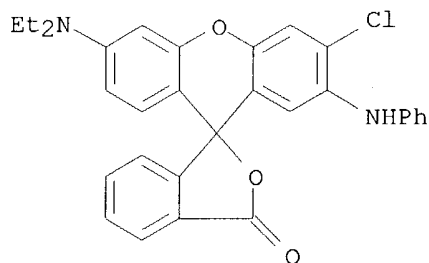
IT **85443-45-4**

RL: USES (Uses)

(color former, thermog. recording sheet using)

RN 85443-45-4 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3'-chloro-6'-(diethylamino)-2'-(phenylamino)- (9CI) (CA INDEX NAME)



IT **147-14-8**, Copper **phthalocyanine** blue **2512-29-0**, Hansa Yellow

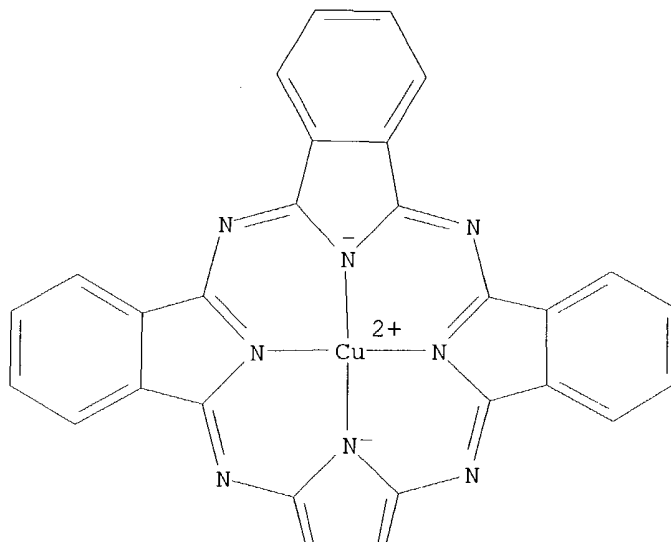
RL: USES (Uses)

(colored thermog. recording sheet containing,)

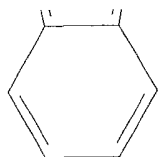
RN 147-14-8 HCA

CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

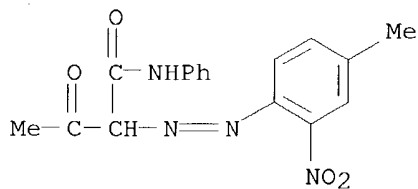
PAGE 1-A



PAGE 2-A



RN 2512-29-0 HCA
 CN Butanamide, 2-[(4-methyl-2-nitrophenyl)azo]-3-oxo-N-phenyl- (9CI) (CA
 INDEX NAME)



IC ICM B41M005-18
 CC 74-7 (Radiation Chemistry, Photochemistry, and **Photographic** and
 Other **Reprographic** Processes)
 IT **80-05-7**, uses and miscellaneous
 RL: USES (Uses)
 (color developer, thermog. recording sheet using)
 IT **85443-45-4**

RL: USES (Uses)

(color former, thermog. recording sheet using)

IT **147-14-8**, Copper **phthalocyanine** blue 548-62-9, Crystal violet **2512-29-0**, Hansa Yellow 19381-50-1

RL: USES (Uses)

(colored thermog. recording sheet containing,)

L113 ANSWER 19 OF 26 HCA COPYRIGHT 2004 ACS on STN

103:96334 Color electrophotographic process. (Canon K. K., Japan). Jpn. Tokkyo Koho JP 60015066:B4 19850417 Showa, 5 pp. (Japanese). CODEN: JAXXAD. APPLICATION: JP 1976-158717 19761227.

AB A color electrophotog. process is claimed in which a part of the coloring agent in yellow and/or magenta toners is substituted with a color-former (or developer) of a 2-component coloration system, and the color-developer (or former) of the coloration system is added to toner image receptor surface layer. The method improves the reproducibility of the original colors. Thus, cyan toners containing maleic acid-styrene copolymer, polystyrene and **phthalocyanine** blue, magenta toners containing polyester, silicone resin and Brilliant Carmine 6B, and yellow toners containing polystyrene, silicone resin, Benzidine Yellow and leuco auramine were prepared, while a paper support was coated with a composition containing **Bisphenol A**, stearic acid, butadiene-styrene copolymer and an emulsifier to give a receptor sheet. The color electrophotog. process was carried out successively by imagewise exposure through red filter, development by cyan toners, exposure through green filter, magenta development, exposure through blue filter, yellow development, toner image transfer, and fixing. The reproduction of the original color was excellent.

IT **147-14-8**

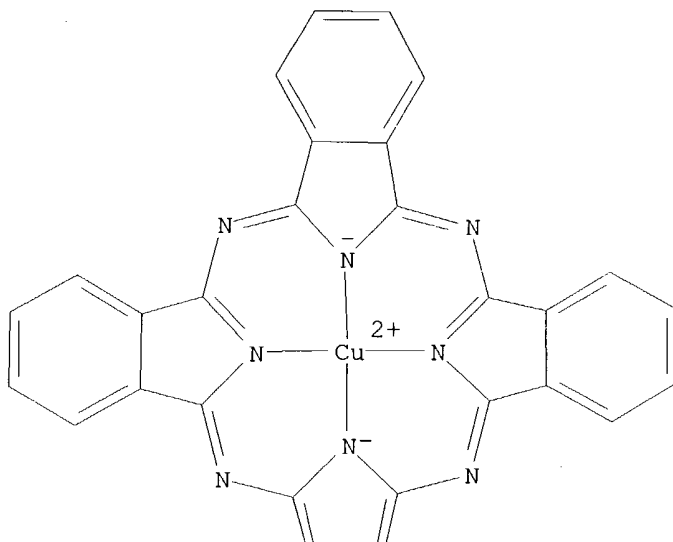
RL: USES (Uses)

(color electrophotog. toners containing)

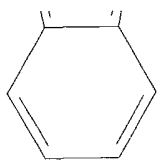
RN 147-14-8 HCA

CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

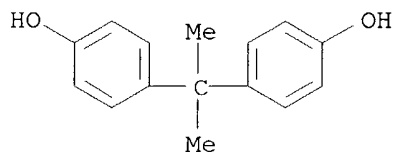
PAGE 1-A



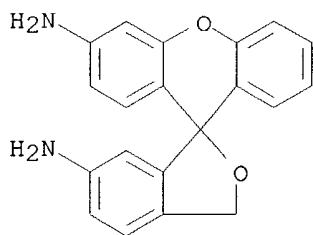
PAGE 2-A



IT **80-05-7**, uses and miscellaneous
 RL: USES (Uses)
 (color-developer, color electrophotog. toner image receptors containing)
 RN 80-05-7 HCA
 CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



IT **50354-78-4**
 RL: USES (Uses)
 (color-former, color electrophotog. toners containing)
 RN 50354-78-4 HCA
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthene]-3',6-diamine (9CI) (CA INDEX NAME)



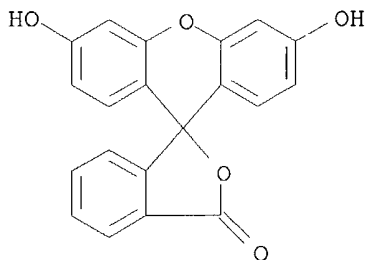
IC ICM G03G015-01
ICS G03G013-01
CC 74-3 (Radiation Chemistry, Photochemistry, and **Photographic** and Other **Reprographic** Processes)
IT **147-14-8** 5281-04-9 6358-85-6 15518-68-0
RL: USES (Uses)
(color electrophotog. toners containing)
IT **80-05-7**, uses and miscellaneous
RL: USES (Uses)
(color-developer, color electrophotog. toner image receptors containing)
IT 3375-25-5 **50354-78-4**
RL: USES (Uses)
(color-former, color electrophotog. toners containing)

L113 ANSWER 20 OF 26 HCA COPYRIGHT 2004 ACS on STN

102:141001 Laser multilayer recording materials. (Nippon Telegraph and Telephone Public Corp., Japan). Jpn. Kokai Tokkyo Koho JP-59210543 A2 19841129 Showa, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-84249 19830516.

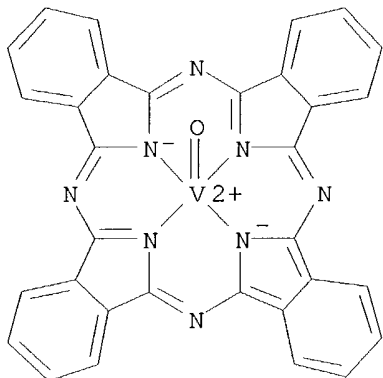
AB A multilayer laser recording material with improved sensitivity and stability is obtained by forming on a substrate a multiset laminate wherein each set is a sandwiched structure comprised of a light absorbing middle layer which is the same for all sets and 2 transparent outer layers. The above sandwiched multiset laminate may contain >2 different light absorbing middle layers.

IT **2321-07-5**
RL: USES (Uses)
(laser multiset sandwiched laminated recording materials containing)
RN 2321-07-5 HCA
CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)
(CA INDEX NAME)



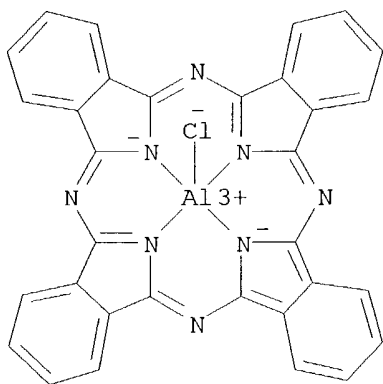
IT **13930-88-6 53199-37-4**
RL: USES (Uses)
(laser multiset sandwiched laminated recording materials with light-adsorbing layer of)
RN 13930-88-6 HCA
CN Vanadium, oxo[29H,31H-phthalocyaninato(2-)-κN29,κN30,κN3

1, κ N32]-, (SP-5-12)- (9CI) (CA INDEX NAME)



RN 53199-37-4 HCA

CN Aluminum, chloro[C-chloro-29H,31H-phthalocyaninato(2-)- κ N29, κ N30, κ N31, κ N32]- (9CI) (CA INDEX NAME)



D1-Cl

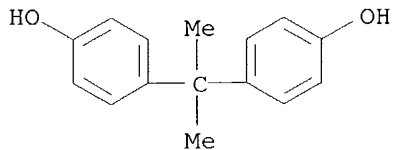
IT 80-05-7, uses and miscellaneous 87715-08-0

RL: USES (Uses)

(laser multiset sandwiched laminated recording materials with transparent layer of)

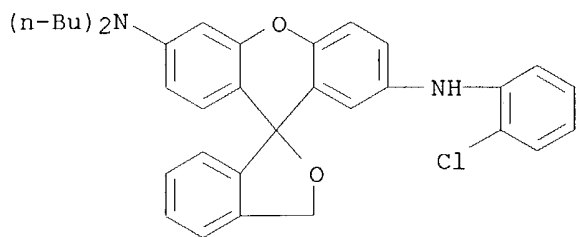
RN 80-05-7 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



RN 87715-08-0 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthene]-2',6'-diamine,
N6',N6'-dibutyl-N2'-(2-chlorophenyl)- (9CI) (CA INDEX NAME)



IC G11B007-24; B41M005-26; G11C013-04

CC 74-12 (Radiation Chemistry, Photochemistry, and **Photographic** and Other **Reprographic** Processes)

IT **2321-07-5**

RL: USES (Uses)

(laser multiset sandwiched laminated recording materials containing)

IT 7440-22-4, uses and miscellaneous 7440-57-5, uses and miscellaneous
7440-69-9, uses and miscellaneous 13494-80-9, uses and miscellaneous

13930-88-6 53199-37-4 89962-82-3 95570-07-3

RL: USES (Uses)

(laser multiset sandwiched laminated recording materials with light-adsorbing layer of)

IT 77-09-8 **80-05-7**, uses and miscellaneous 124-26-5 125-20-2
1314-35-8, uses and miscellaneous 1552-42-7 5339-80-0 7446-07-3
7631-86-9, uses and miscellaneous 26628-47-7 **87715-08-0**

RL: USES (Uses)

(laser multiset sandwiched laminated recording materials with transparent layer of)

L113 ANSWER 21 OF 26 HCA COPYRIGHT 2004 ACS on STN

100:183285 Optical recording medium. Morinaka, Akira; Oikawa, Shigeru; Sato,

Hirotsugu (Nippon Telegraph and Telephone Public Corp., Japan). Ger.

Offen. DE 3319738-A1 19831201, 37 pp. (German). CODEN: GWXXBX.

APPLICATION: DE 1983-3319738 19830531. PRIORITY: JP 1982-92634 19820531;

JP 1982-111549 19820630; JP 1982-153861 19820906.

AB A multilayer heat-sensitive optical recording structure with high light sensitivity which gives multicolored images of high resolution and contrast consists of a support which is transparent to visible light into the near-IR region, a color agent coating on the support containing leuco dyes, a light-absorbing layer for a sp. wavelength, on the dye layer, and a developer layer composed of a transparent solid acid. The layer structure may contain several color-agent coatings each associated with a light-absorbing layer with wavelength selected for the underlying leuco dye. Thus, a glass support was coated in a Ta boat under a pressure $\leq 10^{-5}$ torr with Crystal Violet Lactone 2.0μ , a light-absorbing layer, and phenolphthalein to give a plate which can be used to give blue images when contacted with a thermal printing head.

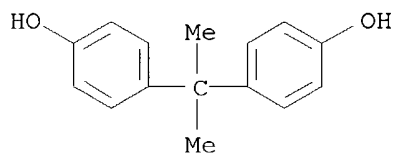
IT **80-05-7**, uses and miscellaneous

RL: USES (Uses)

(color optical recording material with color-developing layer containing, heat-sensitive)

RN 80-05-7 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



IT 26206-78-0 87715-08-0 89907-56-2

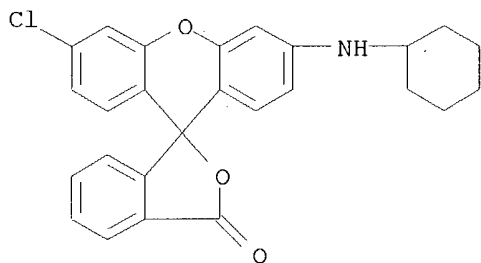
89946-81-6 89946-82-7

RL: USES (Uses)

(color optical recording materials with color-forming layer containing, heat-sensitive)

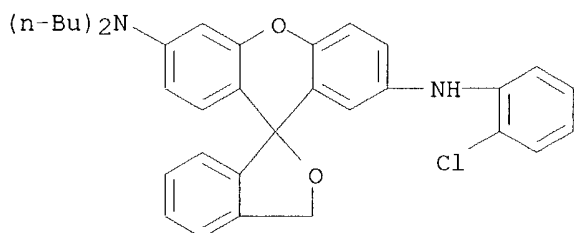
RN 26206-78-0 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3'-chloro-6'-(cyclohexylamino)- (9CI) (CA INDEX NAME)



RN 87715-08-0 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthene]-2',6'-diamine, N6',N6'-dibutyl-N2'-(2-chlorophenyl)- (9CI) (CA INDEX NAME)

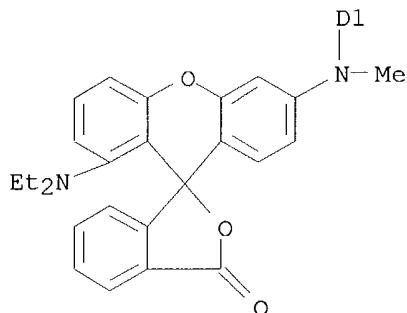


RN 89907-56-2 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 6'-[(chlorophenyl)methylamino]-1'-(diethylamino)- (9CI) (CA INDEX NAME)

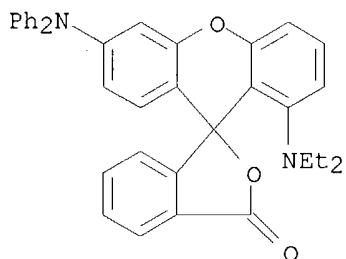


D1- C1



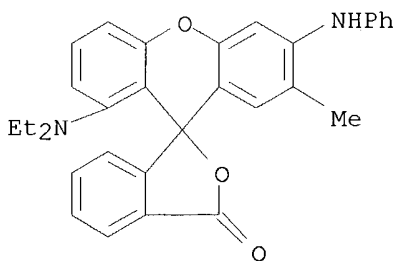
RN 89946-81-6 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 1'-(diethylamino)-6'-(diphenylamino)- (9CI) (CA INDEX NAME)



RN 89946-82-7 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 1'-(diethylamino)-7'-(phenylamino)-methyl-6'-(phenylamino)- (9CI) (CA INDEX NAME)



IT 147-14-8 2321-07-5 14376-21-7

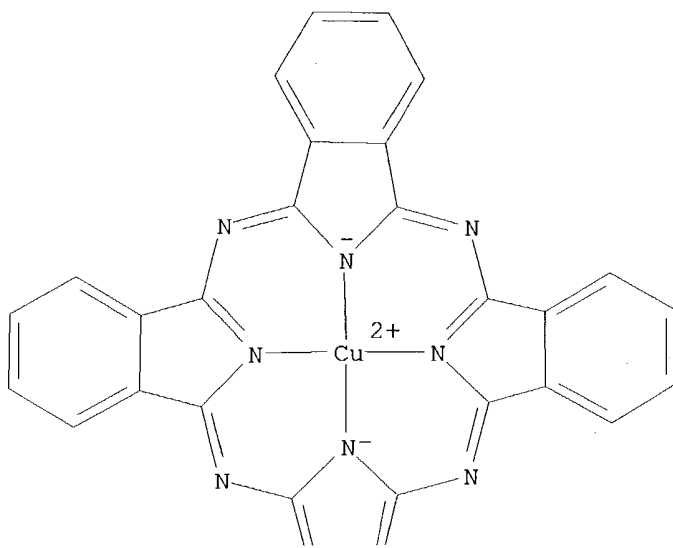
47822-79-7

RL: USES (Uses)

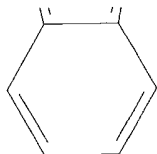
(color optical recording materials with light-absorbing layer containing, heat-sensitive)

RN 147-14-8 HCA
 CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka
 ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

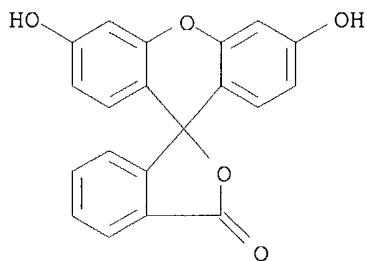
PAGE 1-A



PAGE 2-A

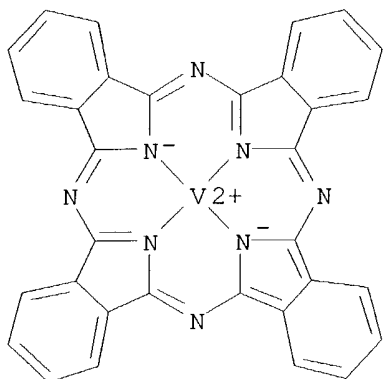


RN 2321-07-5 HCA
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)
 (CA INDEX NAME)



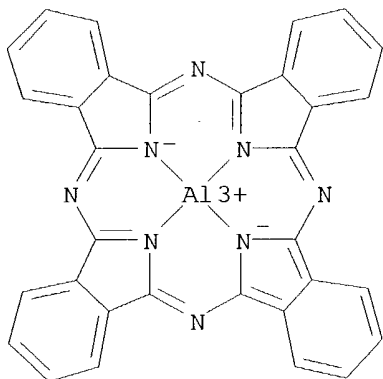
RN 14376-21-7 HCA

CN Vanadium, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.
kappa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



RN 47822-79-7 HCA

CN Aluminum(1+), [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN
31,κN32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



IC B41M005-18; C23C013-04; C03C017-42

CC 74-12 (Radiation Chemistry, Photochemistry, and **Photographic** and
Other **Reprographic** Processes)

IT 72-48-0 76-61-9 77-09-8 **80-05-7**, uses and miscellaneous
117-39-5 125-20-2 480-16-0 603-45-2 1733-12-6 3225-30-7
4430-25-5 32638-88-3

RL: USES (Uses)

(color optical recording material with color-developing layer containing,
heat-sensitive)

IT 102-06-7 124-26-5 1249-97-4 1552-42-7 5339-80-0 **26206-78-0**

30378-58-6D, Ph derivs. **87715-08-0 89907-56-2**

89946-81-6 89946-82-7 89963-96-2

RL: USES (Uses)

(color optical recording materials with color-forming layer containing,
heat-sensitive)

IT **147-14-8 2321-07-5** 2768-89-0 6439-53-8

14376-21-7 28984-20-5 **47822-79-7** 89918-26-3

89918-29-6 89962-82-3 89962-83-4 97428-30-3

RL: USES (Uses)

(color optical recording materials with light-absorbing layer containing,

heat-sensitive)

L113 ANSWER 22 OF 26 HCA COPYRIGHT 2004 ACS on STN

100:165388 Color electrophotography. (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 57185447, A2 19821115 Showa, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1981-70506 19810511.

AB An electrophotog. plate is charged, patternwise (stripes or mosaic patterns) coated with colored but optically transparent particles having different color decomposition characteristics, imagewise exposed, and then developed to form colored images. The transparent particles may contain sublimable leuco dyes. Thus, red particles containing a melamine resin, methyl orange, and Aizen Rose Bengal B (C. I. Acid Red 94) were coated with a 3,7-bis(diethylamino)-10-trichloroacetylphenoxazine. Sep., green particles composed of a melamine resin, Suminol Leveling Yellow NR (C. I. Acid Yellow 19), and Kayacion Green A-4G were coated with 4-(5-chloro-1,3,3-trimethylindolino)methyl-7-(N-methylamino)-5-chloro-1',3',3'-trimethylspiro[2H-1-benzopyran-(2H)indole]. And purple-colored particles composed of a melamine resin, Kayacion Turquoise Blue P-GF, and Acid Violet 6B were coated with a yellow-forming leuco dye. Then, an electrophotog. plate was charged, then honeycomb-type mosaic patterns were formed on the plate by using the above 3 different particles, the plate was then imagewise exposed by using a color original, shaken to remove some of the particles to form colored images on the plate, then the images were transferred onto clay-coated paper, heated, and the particles removed to give a colored copy.

IT 632-68-8 12225-39-7

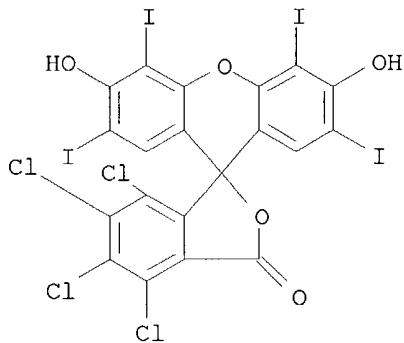
RL: TEM (Technical or engineered material use); USES (Uses)

(electrophotog. toners containing, color decomposition-type, for color

images)

RN 632-68-8 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 4,5,6,7-tetrachloro-3',6'-dihydroxy-2',4',5',7'-tetraiodo-, dipotassium salt (9CI) (CA INDEX NAME)

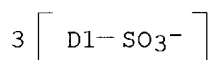
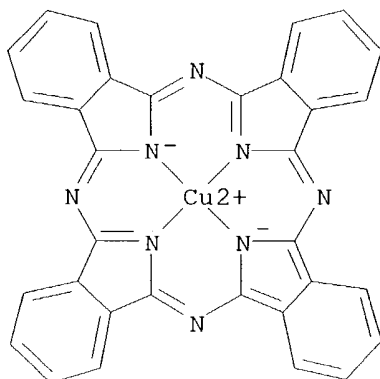


●2 K

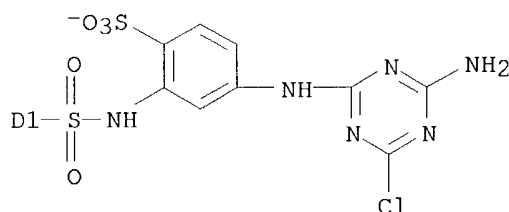
RN 12225-39-7 HCA

CN Cuprate(4-), [C-[[[5-[(4-amino-6-chloro-1,3,5-triazin-2-yl)amino]-2-sulphophenyl]amino]sulfonyl]-29H,31H-phthalocyanine-C,C,C-trisulfonato(6-)-κN29,κN30,κN31,κN32]-, tetrasodium (9CI) (CA INDEX NAME)

PAGE 1-A



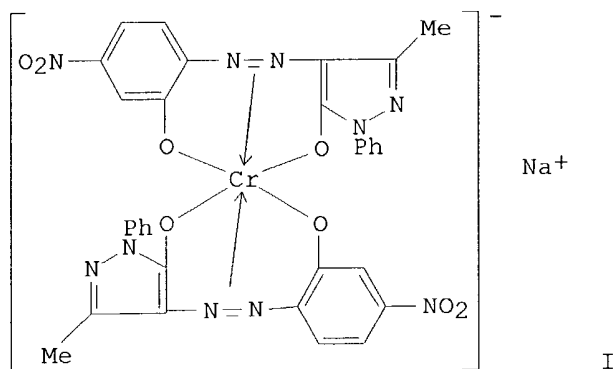
PAGE 2-A



IC G03G013-22; G03G015-00
 CC 74-3 (Radiation Chemistry, Photochemistry, and **Photographic** and
 Other **Reprographic** Processes)
 IT 547-58-0 **632-68-8** 1694-09-3 9003-08-1 12220-64-3
12225-39-7 12225-74-0 70639-87-1 89810-68-4
 RL: TEM (Technical or engineered material use); USES (Uses)
 (electrophotog. toners containing, color decomposition-type, for color
 images)

L113 ANSWER 23 OF 26 HCA COPYRIGHT 2004 ACS on STN
 96:105793 Solubilizing dyes. (Hoya Corp., Japan). Jpn. Kokai Tokkyo Koho JP
 56110767 A2 19810902 Showa, 10 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 1980-12054 19800205.

GI



AB Metal complex, Cu phthalocyanine, and acid dyes were solubilized in paraffin solvents by ethoxylated C12-18 alkanamines. For example, a dispersion of 40 parts I [64560-69-6] in 100 parts octane was stirred with 80 parts C18H37N[(CH2CH2O)6H]2 [26635-92-7] for 1 h and freed from octane to give a composition having solubility 250 weight parts/100 volume

parts

2-methyloctane, compared with 0.001 weight part for neat I.

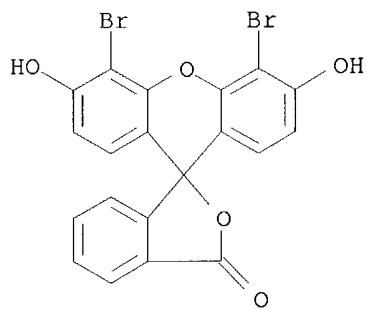
IT 4372-02-5 62611-78-3 62611-90-9
63267-48-1 64599-23-1 64614-13-7
65584-98-7

RL: USES (Uses)

(solubilizers for, ethoxylated alkanamines as)

RN 4372-02-5 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 4',5'-dibromo-3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)

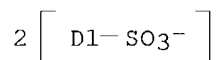
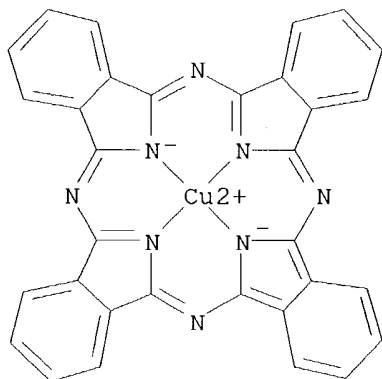


●2 Na

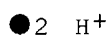
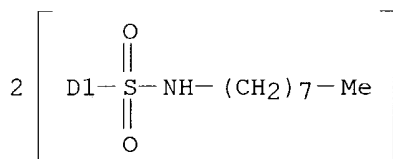
RN 62611-78-3 HCA

CN Cuprate(2-), [C,C-bis[(octylamino)sulfonyl]-29H,31H-phthalocyanine-C,C-disulfonato(4-)-N29,N30,N31,N32]-, dihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A

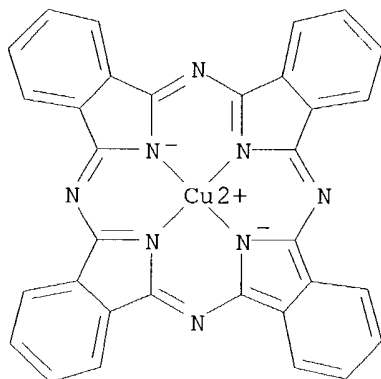


PAGE 2-A

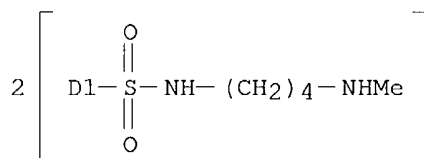


RN 62611-90-9 HCA
 CN Cuprate(1-), [C,C-bis[[[4-(methylamino)butyl]amino]sulfonyl]-29H,31H-phthalocyanine-C-sulfonato(3-)-N29,N30,N31,N32]-, hydrogen (9CI) (CA INDEX NAME)

PAGE 1-A

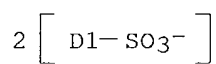
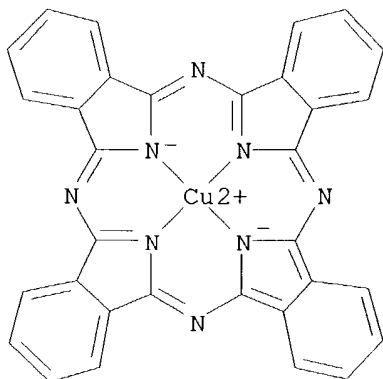
D1-SO₃⁻

PAGE 2-A

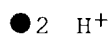
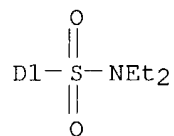
● H⁺

RN 63267-48-1 HCA
 CN Cuprate(2-), [C,C-bis[(diethylamino)sulfonyl]-29H,31H-phthalocyanine-C,C-disulfonato(4-)-N29,N30,N31,N32]-, dihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A

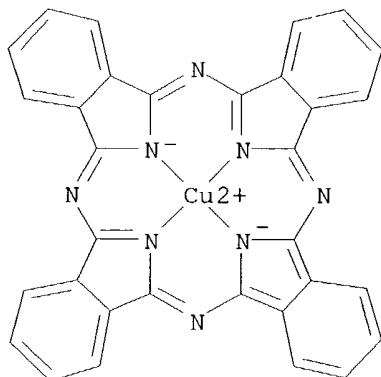


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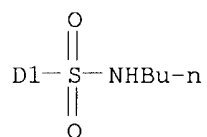


RN 64599-23-1 HCA
 CN Cuprate(1-), [C-[(butylamino)sulfonyl]-29H,31H-phthalocyanine-C-sulfonato(3-)-N29,N30,N31,N32]-, hydrogen (9CI) (CA INDEX NAME)

PAGE 1-A

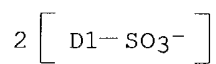
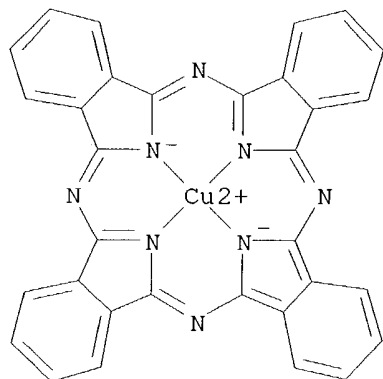
D1-SO₃⁻

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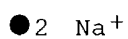
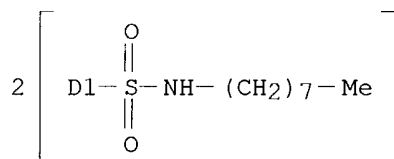
● H⁺

RN 64614-13-7 HCA
 CN Cuprate(2-), [C,C-bis[(octylamino)sulfonyl]-29H,31H-phthalocyanine-C,C-disulfonato(4-)-N29,N30,N31,N32]-, disodium (9CI) (CA INDEX NAME)

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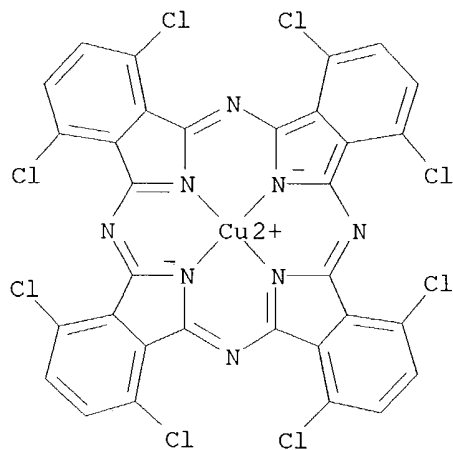
PAGE 2-A



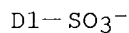
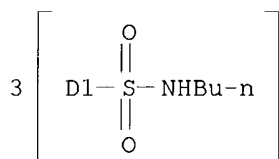
RN 65584-98-7 HCA

CN Cuprate(1-), [C,C,C-tris[(butylamino)sulfonyl]-1,4,8,11,15,18,22,25-octachloro-29H,31H-phthalocyanine-2-sulfonato(3-)-N29,N30,N31,N32]-, hydrogen (9CI) (CA INDEX NAME)

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IC C09B067-44
 CC 41-3 (Dyes, Fluorescent Brighteners, and **Photographic**
 Sensitizers)
 IT 860-22-0 1694-09-3 2861-02-1 **4372-02-5** 6408-59-9
 25317-17-3 41741-86-0 **62611-78-3** **62611-90-9**
 63267-41-4 **63267-48-1** 63388-90-9 64560-69-6 64560-71-0
 64560-72-1 64596-65-2 **64599-23-1** **64614-13-7**
65584-98-7 65595-45-1 72906-53-7 80156-92-9 80164-71-2
 80164-88-1 80191-50-0 80261-62-7
 RL: USES (Uses)
 (solubilizers for, ethoxylated alkanamines as)

L113 ANSWER 24 OF 26 HCA COPYRIGHT 2004 ACS on STN
 93:213344 Electrophotographic negative-positive reversal imaging process.
 (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho
 JP 55057853 19800430 Showa, 6 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 1978-130698 19781023.

AB An electrophotog. plate is charged, then coated (electrostatically) with

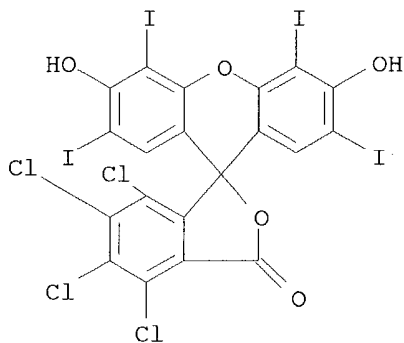
light-transmitting particles, then the coated plate is imagewise exposed through a neg., the particles on the exposed area are removed, then the particle images remaining on the plate is transferred to a receptor having mirror like surface or black surface, and the receptor sheet is exposed to white light to give pos. images. The method can be used for black-and-white or color electrophotog. reversal process. Thus, glass powder coated with SnO₂ was spread on a charged Se electrophotog. plate, the plate was imagewise exposed, then the glass powder on the exposed area were removed by shaking to give particle images which were observed as white images (on black background) when a white light was used to observe scattered light from the plate.

IT 632-68-8 12225-39-7

RL: TEM (Technical or engineered material use); USES (Uses)
(electrophotog. toners containing, for reversal process)

RN 632-68-8 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 4,5,6,7-tetrachloro-3',6'-dihydroxy-2',4',5',7'-tetraiodo-, dipotassium salt (9CI) (CA INDEX NAME)

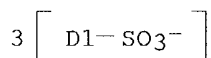
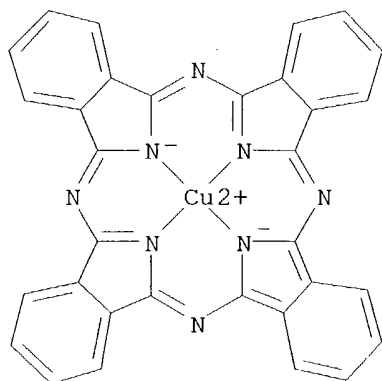


● 2 K

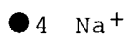
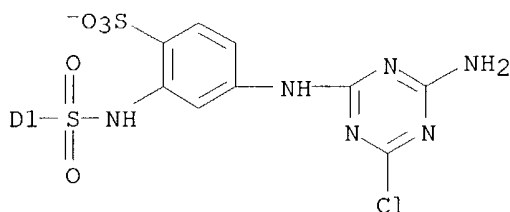
RN 12225-39-7 HCA

CN Cuprate(4-), [C-[[[5-[(4-amino-6-chloro-1,3,5-triazin-2-yl)amino]-2-sulfophenyl]amino]sulfonyl]-29H,31H-phthalocyanine-C,C,C-trisulfonato(6-)-κN29,κN30,κN31,κN32]-, tetrasodium (9CI) (CA INDEX NAME)

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IC G03G013-01; G03G015-01
 CC 74-3 (Radiation Chemistry, Photochemistry, and **Photographic**
 Processes)
 IT 547-58-0 **632-68-8** 1335-23-5 1694-09-3 9003-08-1
12225-39-7 12225-74-0 12239-15-5 18282-10-5
 RL: TEM (Technical or engineered material use); USES (Uses)
 (electrophotog. toners containing, for reversal process)

L113 ANSWER 25 OF 26 HCA COPYRIGHT 2004 ACS on STN
 92:50066 Multicolor electrophotographic process. Inoue, Satoru; Katagiri,
 Nobuyuki (Ricoh Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP-54009929
 19790125 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
 1977-74489 19770624.

AB In carrying out multicolor electrophotog. process, a colored toner containing
 a dye which decolors upon thermal reaction and another colored toner
 containing a component which reacts with the dye in the 1st toner upon heating
 are used so that the color of overlapped area can be changed during the
 thermal fixing. Optionally, the 1st toner contains a compound which forms a

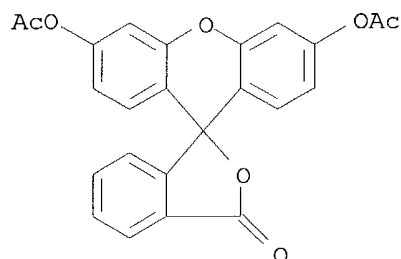
color upon thermal reaction and the 2nd toner contains a compound which reacts with the color former in the 1st toner upon heating. The method is especially useful for eliminating the color-mixing of the overlapped areas. Thus, a Se electrophotog. plate was exposed through a black-and-red original and a red filter, then developed by using a black toner consisting of styrene resin 100, carbon black 7, and crystal violet lactone 5 parts, and the toner images were transferred to a receptor paper. Subsequently, the Se plate was imagewise exposed without the filter, developed by using a toner consisting of styrene resin 100, Permanent Red F5R 7 and **Bisphenol A** 5 parts, and the red images were transferred to the receptor sheet, and the receptor sheet was heated to give a copy with pure black images and red images. When crystal violet lactone and **Bisphenol A** were not used, redish-black images were obtained in the overlapped areas.

IT 596-09-8D, reaction products with diphenylguanidine
67340-41-4

RL: USES (Uses)
(electrophotog. color toners containing)

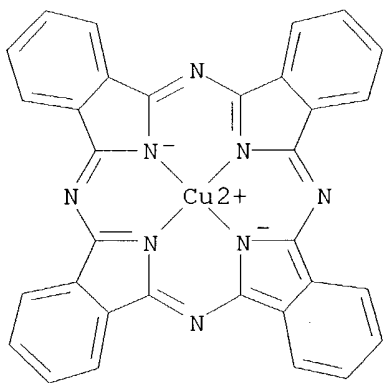
RN 596-09-8 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-bis(acetyloxy)-
(9CI) (CA INDEX NAME)

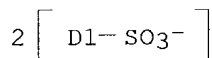


RN 67340-41-4 HCA

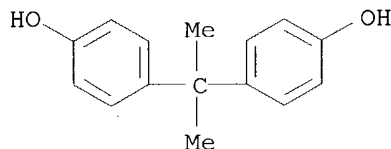
CN Cuprate(2-), [29H,31H-phthalocyanine-C,C-disulfonato(4-)-
κN29,κN30,κN31,κN32]-, barium (1:1) (9CI) (CA
INDEX NAME)



● Ba²⁺



IT **80-05-7**, uses and miscellaneous
 RL: USES (Uses)
 (electrophotog. color toners containing, for automatic color correction)
 RN 80-05-7 HCA
 CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



IC G03G013-01
 CC 74-3 (Radiation Chemistry, Photochemistry, and **Photographic** Processes)
 IT Photography, electro-, color
 (automatic color corrections in, by Crystal Violet lactone-
Bisphenol A thermal reaction)
 IT 102-06-7D, reaction products with **diacetoxyfluoran**
596-09-8D, reaction products with diphenylguanidine 3564-21-4
 5281-04-9 **67340-41-4**
 RL: USES (Uses)
 (electrophotog. color toners containing)
 IT **80-05-7**, uses and miscellaneous 1552-42-7
 RL: USES (Uses)
 (electrophotog. color toners containing, for automatic color correction)

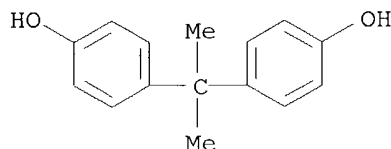
L113 ANSWER 26 OF 26 HCA COPYRIGHT 2004 ACS on STN

89:207310 Thermochromic materials. Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; Nakashima, Sunao (Pilot Ink Co., Ltd., Japan). Can. CA 1025200 19780131, 68 pp. (English). CODEN: CAXXA4. APPLICATION: CA 1973-181341 19730918.

AB Thermochromic compns. are comprised of an electron-donating, chromatic organic compound, a compound having a phenolic hydroxyl group, and a compound selected from the group consisting of higher aliphatic monovalent alcs. and acid alc. esters. The thermochromic compns. are suitable for preparing paints, writing and printing inks, temperature-indicating devices, and thermooptic displays. Thus, Crystal Violet lactone 1, **Bisphenol A** 1, and lauryl alc. 25 parts were mixed at 80-90° with agitation to give a thermochromic material. The material showed a blue color at ≤15° and underwent a reversal color change to colorless when heated above that temperature

IT **80-05-7**, properties
 RL: PRP (Properties)
 (thermochromic compns. containing electron-donating organic chromatic compound,
 aliphatic alc. and)

RN 80-05-7 HCA
 CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



IT **1328-54-7**

RL: USES (Uses)

(thermochromic compns. containing electron-donating organic chromatic compound,

phenolic compound, aliphatic alc. and)

RN 1328-54-7 HCA

CN C.I. Solvent Blue 25 (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 26206-78-0 34342-67-1 36886-76-7

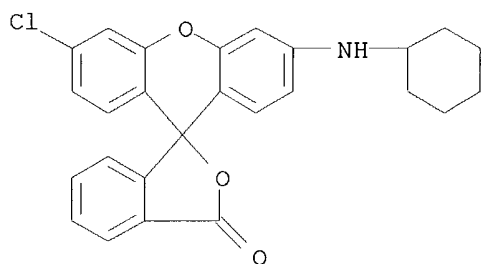
68252-92-6

RL: USES (Uses)

(thermochromic compns. containing phenolic compound, aliphatic alc. and,)

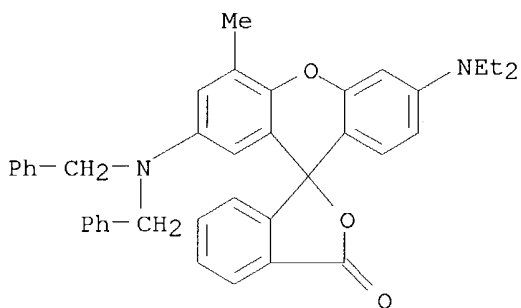
RN 26206-78-0 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3'-chloro-6'-(cyclohexylamino)- (9CI) (CA INDEX NAME)



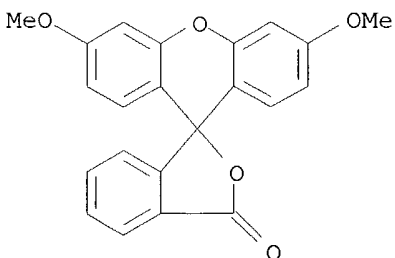
RN 34342-67-1 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2'-[bis(phenylmethyl)amino]-6'-(diethylamino)-4'-methyl- (9CI) (CA INDEX NAME)



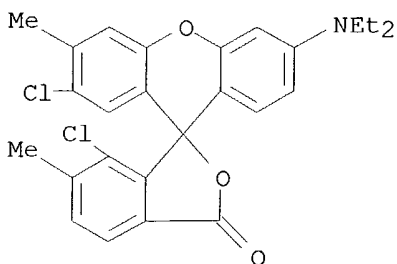
RN 36886-76-7 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dimethoxy- (9CI) (CA INDEX NAME)



RN 68252-92-6 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',7-dichloro-6'-(diethylamino)-3',6-dimethyl- (9CI) (CA INDEX NAME)

CC 74-8 (Radiation Chemistry, Photochemistry, and **Photographic** Processes)

Section cross-reference(s): 42, 73

IT **80-05-7**, properties

RL: PRP (Properties)

(thermochromic compns. containing electron-donating organic chromatic compound, aliphatic alc. and)

IT 123-28-4 **1328-54-7** 2985-59-3 26898-17-9 68053-02-1

RL: USES (Uses)

(thermochromic compns. containing electron-donating organic chromatic compound, phenolic compound, aliphatic alc. and)

IT **26206-78-0 34342-67-1 36886-76-7** 68027-16-768027-17-8 **68252-92-6**

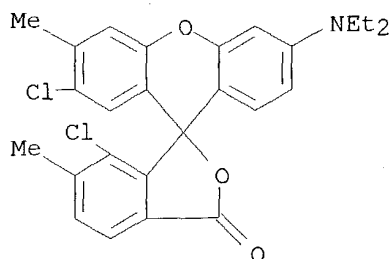
RL: USES (Uses)

(thermochromic compns. containing phenolic compound, aliphatic alc. and,)

=>

RN 68252-92-6 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',7-dichloro-6'-(diethylamino)-3',6-dimethyl- (9CI) (CA INDEX NAME)

CC 74-8 (Radiation Chemistry, Photochemistry, and **Photographic** Processes)

Section cross-reference(s): 42, 73

IT **80-05-7**, properties

RL: PRP (Properties)

(thermochromic compns. containing electron-donating organic chromatic compound, aliphatic alc. and)

IT 123-28-4 **1328-54-7** 2985-59-3 26898-17-9 68053-02-1

RL: USES (Uses)

(thermochromic compns. containing electron-donating organic chromatic compound, phenolic compound, aliphatic alc. and)

IT **26206-78-0 34342-67-1 36886-76-7** 68027-16-768027-17-8 **68252-92-6**

RL: USES (Uses)

(thermochromic compns. containing phenolic compound, aliphatic alc. and,)

=>